Vol. 921 Number 1

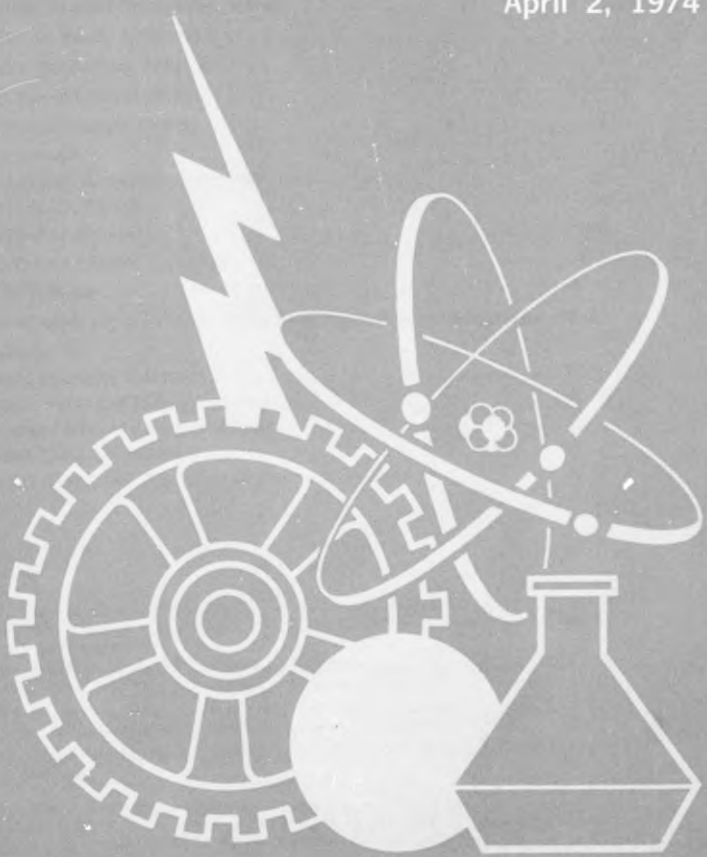
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

April 2, 1974



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 2, 1974 Volume 921 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of February 1974

Examiner affirmed	120
Examiner affirmed in part	29
Examiner reversed	49
Total	198

Section 102(d), as Amended, Effective as of Feb. 25, 1974

Public Law 92–358, dated July 28, 1972, amended subsection 102(d) of Title 35 United States Code, to provide that a prior grant of an inventor's certificate, in addition to prior patenting of the invention in a foreign country, may give rise to a statutory bar. As amended, the subsection reads as follows:

"(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or".

By the terms of the statute, the above amendment shall take effect six months from the date when Articles 1–12 of the Paris Convention of March 20, 1883, for the Protection of Industrial Property, as revised at Stockholm, July 14, 1967, come into force with respect to the United States and shall apply to applications filed thereafter in the United States. Since the treaty entered into force with respect to the U.S. on August 25, 1973, the above amendment became effective February 25, 1974.

C. MARSHALL DANN,
March 5, 1974. *Commissioner of Patents.*

Errata

In the OFFICIAL GAZETTE of Apr. 24, 1973 at page TM 322, "824,798. ANUSOL. Cl. 18." should be deleted.

In the OFFICIAL GAZETTE of May 15, 1973 at page TM 185, "826,070. SCHICK-BAND. Cl. 23." and "826,081. AUTO-BAND. Cl. 23." should be deleted.

In the OFFICIAL GAZETTE of June 26, 1973 at page TM 267, "302,299. "GNOME" AND DESIGN. Cl. 46 (Int. Cl. 30). 4–11–33." should be deleted.

In the OFFICIAL GAZETTE of July 24, 1973 at page TM 300, "964,759. BLITZ. Char-Broiled Foods (Northwest Florida) Inc. SN 373,388. Pub. 5–16–72. Filed 10–15–70." should be deleted and *964,758. BLITZ. Char-Broiled Foods (Northwest Florida) Inc. SN 373,388. Pub. 5–15–72. Filed 10–15–70.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 2, 1973 at page TM51, "969,645. TEMPLOK. Charles A. Newsmith, Jr., d.b.a. Systematic Storage Company, Inc. SN 398,587. Pub. 2–6–73. Filed 7–16–71." should be deleted and *969,645. TEMPLOK. Charles A. Newsmith, Jr., d.b.a. Systematic Storage Company, Inc. SN 397,587. Pub. 2–6–73. Filed 7–16–71.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 2, 1973 at page TM 53, "969,725. DON RICO. DVR Corporation, d.b.a. Desert Citrus Packers. SN 432,651. Pub. 7–17–73. Filed 8–14–72." should be deleted and *969,725. DON RICO. DVR Corporation, d.b.a. Desert Citrus Packers. SN 432,554. Pub. 7–17–73. Filed 8–14–72.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 2, 1973 at page TM 53, "969,755. PERMA-FLO. A. E. Staley Manufacturing Company. SN 448,642. Pub. 7–17–73. Filed 2–12–73." should be deleted and *969,755. PERMA-FLO. A. E. Staley Manufacturing Company. SN 448,648. Pub. 7–17–73. Filed 2–12–73.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 2, 1973 at page TM 57, under 969,862 "SN 414,410" should be deleted and *SN 415,410* should be inserted.

In the OFFICIAL GAZETTE of Oct. 9, 1973 at page TM 109, "970,077. LABLYTER AND DESIGN. Labconco Corporation. SN 438,098. Pub. 7–24–73. Filed 9–7–72." should be deleted and *970,077. LABLYTER AND DESIGN. Labconco Corporation. SN 434,908. Pub. 7–24–73. Filed 9–7–72.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 23, 1973 at page TM 236, "971,535. TRICHOL-PERM. Redken Laboratories, Inc. SN 444,985. Pub. 8–7–73. Filed 1–2–73" should be deleted and *971,535. TRICHOL-PERM. Redken Laboratories, Inc. SN 444,895. Pub. 8–7–73. Filed 1–2–73.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 23, 1973 at page TM 236, "971,536. TRICHOL-DAN. Redken Laboratories, Inc. SN 444,986. Pub. 8–7–73. Filed 1–2–73." should be deleted and *971,536. TRICHOL-DAN. Redken Laboratories, Inc. SN 444,896. Pub. 8–7–73. Filed 1–2–73.* should be inserted.

In the OFFICIAL GAZETTE of Oct. 23, 1973 at page TM 240, under 971,645 *SN 417,908* should be inserted.

In the OFFICIAL GAZETTE of Oct. 30, 1973 at page TM 300, "972,004. EVER BLOOM AND DESIGN. Flower Bulbs, Inc. SN 438,043. Pub. 8–14–73. Filed 10–20–72." should be deleted and *972,004. EVER BLOOM AND DESIGN. Flower Bulbs, Inc. SN 439,943. Pub. 8–14–73. Filed 10–20–72.* should be inserted.

In the OFFICIAL GAZETTE of Nov. 13, 1973 at page TM 96, "972,695. MISCELLANEOUS DESIGN. Chem-Trol Pollution Services, Inc. MULTIPLE CLASS (Classes 6 and 106). SN 41,923. Pub. 8–28–73. Filed 11–22–72." should be deleted and *972,695. MISCELLANEOUS DESIGN. Chem-Trol Pollution Services, Inc. MULTIPLE CLASS (Classes 6 and 106). SN 441,923. Pub. 8–28–73. Filed 11–22–72.* should be inserted.

In the OFFICIAL GAZETTE of Nov. 27, 1973 at page TM 207, "SN 432,817. Washington Equipment Co., Inc., Paterson, N.J. Pub. 9–11–73. Filed 2–12–73." should be deleted and *973,817. HALCIDERM. E. R. Squibb & Sons, Inc. SN 448,635. Pub. 9–11–73. Filed 2–12–73.* should be inserted.

In the OFFICIAL GAZETTE of Dec. 18, 1973 at page TM 162, "974,855. CAPRI. Moto-Ski Limited. SN 436,508. Pub. 9–25–73. Filed 9–22–72." should be deleted and *974,855. CAPRI. Moto-Ski Limited. SN 436,503. Pub. 9–25–73. Filed 9–22–72.* should be inserted.

In the OFFICIAL GAZETTE of Jan. 8, 1974 at page TM 191, "976,223. AID DE CHEF. Car-Wel Corporation. SN 422,269. Pub. 10–16–73. Filed 4–24–72." should be deleted and *976,223. AID DE CHEF. Car-Wel Corporation. SN 442,269. Pub. 10–16–73. Filed 4–24–72.* should be inserted.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before May 7, 1974:

Batten, James R., Jr., 4241 Columbia Pike, #408, Arlington, Va. 22204
Czerwonky, James H., Post Office Bldg., Box 916, Alexandria, Va. 22313
Gewirtz, Stanley J., 435 W. 119th St., New York, N.Y. 10027
Harrison, Nancy J. H., 5325 Ohmer Ave., Indianapolis, Ind. 46219
Humphrey, Ralph L., 3119 Circle Hill Road, Alexandria, Va. 22305
Markowitz, Steven H., 9717 Cinnamon Creek Dr., Vienna, Va. 22180
Murphy, Herman H., % Applied Technology, 645 Almanor Ave., Sunnyvale, Calif. 94086
Rodrick, Robert M., 881 Summit Ave., Jersey City, N.J. 07307
Rubalcava, Roland G., 2018 Mori Lane, Orange, Calif. 92667
Scifo, Paul C., 10 Lee Court, Franklin Square, N.Y. 11010

Sherman, Edward S., 12600 S. Major Ave., Palos Heights, Ill. 60463
Tucker, Mary Ann, 4922 Media Drive, Indianapolis, Ind. 46208
Weinhold, Donald L., Jr., 221 N. Jackson St., Salisbury, N.C. 28144
Wetmore, Kenneth H., 3137 Ravenwood Blvd., Toledo, Ohio 43614

L. H. GASTON,
Vice-Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,717,603, J. J. Colm, PACIFIER, **filed** Apr. 19, 1973, D.C., S.D.N.Y., Doc. 73–1739, *Eagle Druggists Supply Co. Inc.* v. *Damara Products Inc.* Filed stipulation and order of discontinuance, Nov. 13, 1973.

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, **filed** May 4, 1973, D.C. Md. (Baltimore), Doc. 73–444–B, *Colonial Alloys Company, a partnership of Samuel L. Cohn and Charles C. Cohn* v. *Easco Corporation.* Plaintiff filed notice of dismissal with prejudice, Sept. 28, 1973. **Same, filed** June 6, 1973, D.C. Md. (Baltimore), Doc. 73–578–B, *Colonial Alloys Company* v. *Revere Copper and Brass Incorporated.* Plaintiff filed notice of dismissal with prejudice, Nov. 6, 1973.

2,804,401, B. A. Cousino, MAGNETIC SOUND TAPE, **filed** Feb. 3, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c315, *Faraday, Inc., etc.* v. *Minnesota Mining & Mfg. Co., etc.* Enter order on stipulation for dismissal, Sept. 20, 1971.

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Mar. 29, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c794, *Aldred H. Faulkner* v. *Nippon Gakki Co., Ltd. et al.*

2,901,927, M. Morgan, AUTOMATIC MACHINE TOOL; **3,052,011**, Brainard, Hansen, Sedgwick, Sipek and Baechle, MACHINE TOOL WITH A MECHANICAL CUTTING TOOL HANGER, **filed** Dec. 14, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3123, *Kearney & Trecker Corp. etc.* v. *Houdaille Industries, Inc., etc.* On stipulation this case dismissed with prejudice, Nov. 15, 1973.

2,926,480, E. C. Kimball, PRUNING APPARATUS, **filed** Nov. 13, 1973, D.C., E.D. Calif. (Fresno), Doc. F–893–C, *Kimball Toppers, Inc.* v. *Pete Penner.*

2,938,977, R. H. Koenig, ELECTRIC SWITCHING MAT, **filed** Oct. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2567, *Tapeswitch Corporation of America* v. *Recora Co., Inc.*

2,972,349, R. A. DeWall, CAPILLARY OXYGENATOR, **filed** Oct. 17, 1973, D.C. (Wilmington), Doc. 4744, *The Regents of the University of Minnesota and Dow Chemical Company* v. *Romicon, Inc. and Amicon Corporation.*

2,984,416, N. B. Johnson, HOT AIR HEATING METHODS, **filed** Oct. 19, 1973, D.C. Minn. (St. Paul), Doc. 3–73–313, *Rheem Manufacturing Company* v. *Johnson Heater Corporation.*

3,011,057, H. O. Anger, RADIATION IMAGE DEVICE, **filed** July 7, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–1255RHS, *Ohio Nuclear Inc.* v. *Nuclear-Chicago Corporation.* Order of consent judgment and order dismissing action entered, Sept. 12, 1973.

3,030,744, A. E. Mueller, AIR FILM BEARING FOR MACHINE TOOLS, **filed** Nov. 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2896, *Harig Products, Inc.* v. *K. O. Lee Co., et al.*

3,052,011. (See 2,901,927.)

3,256,219, W. Guenther, PROCESS FOR THE PRODUCTION OF POROUS PLASTICS AND PRODUCTS COMPRISING POLYMERIZING A MONOMER IN A WATER-IN-OIL EMULSION; **Re. 27,444**, same, PROCESS FOR THE PRODUCTION OF POROUS PLASTICS AND PRODUCTS, **filed** Oct. 17, 1973, D.C. Maine (Portland), Doc. 14–96, *Ashland Oil, Inc.* v. *American Cyanamid Company.*

3,648,939, K. I. J. Rosen, YARN STORING DEVICE, **filed** Nov. 8, 1973, D.C. R.I. (Providence), Doc. CA 5362, *Karl Isac Joel Rosen* v. *Lawson-Hemphill, Inc.*

3,365,935, H. J. Kane, SOUND DETECTING TEST APPARATUS, **filed** Nov. 13, 1973, D.C., S.D.N.Y., Doc. 73–C–4863, CES, *Hubert J. Kane* v. *Volkswagenwerk Aktiengesellschaft et al.*

3,725,158(a), Messerschmidt, Jr., Heyman, and Johnsen II, MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE; **3,725,159**, same, POWDERLESS ETCHING BATH COMPOSITIONS; **3,728,180**, same; **3,730,899**, same, POWDERLESS ETCHING BATH ADDITIVE; **3,736,197**, same, POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES, **filed** Nov. 9, 1973, D.C., N.D. Ga. (Atlanta), Doc. 19325, *Mona Industries, Inc.* v. *Cox Enterprises, Inc., doing business as Atlanta Newspapers.* **Same, filed** Nov. 9, 1973, D.C., E.D. Mich. (Detroit), Doc. 4–70639, *Mona Industries, Inc.* v. *The Evening News Association.* **Same, filed** Nov. 9, 1973, D.C. Fla. (Miami), Doc. 73–1737–C–JE, *Mona Industries, Inc.* v. *The Miami Herald Publishing Co.*

3,725,158(b), Messerschmidt, Jr., Heyman, and Johnsen II, MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE; **3,725,159**, same, POWDERLESS ETCHING BATH COMPOSITIONS, **filed** Nov. 5, 1973, D.C.N.J. (Newark), Doc. 1596–73, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical* Corporation.

3,725,159. (See 3,725,158(a)(b).)

3,728,180. (See 3,725,158(a).)

3,730,899. (See 3,725,158(a).)

3,731,434, G. E. Karwinski, GRINDING MACHINE; **3,736,113**, Umbdenstock and Breitenstein, SPIRAL GRINDING RELIEVING MACHINE WITH TANDEM PLANETARY DIFFERENTIAL DRIVE, **filed** Oct. 24, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2731, *Spiral Step Tool Co.* v. *Metal Removal Div., Fed. Mogul Corp. et al.*

3,736,113. (See 3,731,434.)

3,736,197. (See 3,725,158(a).)

Re. 23,890, H. M. Chase, PROCESS FOR PREPARING AND PRESERVING FROZEN POTATOES; **Re. 23,891**, same, PROCESS FOR PREPARING AND PRESERVING POTATOES, **filed** Aug. 10, 1971, D.C. Idaho (Boise), Doc. C–1–71–68, *H. M. Chase Corporation* v. *Ore-Ida Foods, Inc.* Granted defendant's motion for summary judgment, final judgment be entered in favor of defendant and against plaintiff, dismissing action, Nov. 5, 1973.

Re. 23,891. (See Re. 23,890.)

Re. 27,444. (See 3,256,219.)

2,734,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Apr. 2, 1970, D.C., N.D., Ill. (Chicago), Doc. 70c776, *Egan Machinery Company* v. *Battenfeld Corporation of America.* Pursuant to stipulated motion to dismiss under Rule 41, case dismissed, Oct. 19, 1970.

2,819,774, Schmidt and Sisk. CONSTANT FLOW SUCTION UNIT, **filed** Aug. 24, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–1501, SAW, *Alfred C. Schmidt, individually and doing business as Schmidt Instrument Co.* v. *Radeco Incorporated et al.*

2,883,255, R. A. Anderson, AUTOMATIC PROCESS LOGGING SYSTEM; **2,929,990**, same, DATA REDUCTION SYSTEM; **2,987,704**, Gimpel and Daniels, VARIABLE MONITORING AND RECORDING APPARATUS, **filed** Aug. 19, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1725, *The SCAM Instrument Corporation* v. *Control Data Corporation.* Decision, filed mandate: judgment of USDC reversed, May 5, 1972.

2,919,534, Bolinger and Klein, IMPROVED TEXTILE MATERIALS AND METHOD AND APPARATUS FOR PREPARING THE SAME; **3,024,518**, R. B. Newton, METHODS OF MAKING PILE FABRICS; **3,325,988**, Klein and Bolinger, BALANCED ELASTICIZED MULTI-FILAMENT YARN; **3,325,989**, E. D. Bolinger, BALANCED ELASTICIZED MULTIFILAMENT YARN, **filed** May 22, 1968, D.C., W.D. Va. (Lynchburg), Doc. 68–C–24–L, *Deering Milliken Research Corporation* v. *Burlington Industries, Inc. and E. I. du Pont de Nemours & Company.* Decision: Case settled by agreement of parties, order of dismissal entered, July 26, 1973.

2,922,990. (See 2,883,255.)

2,941,172, W. T. Sutton, Jr., ELECTRICAL WINDING CONSTRUCTION, **filed** Aug. 9, 1973, D.C., S.D. Ohio (Cincinnati), Doc. 8913, *Coilcraft, Inc.* v. *Standard International Corp.*

2,987,704. (See 2,883,255.)

2,994,881, R. T. Kaufman, JOGGING AND STAPLING MACHINE, **filed** Aug. 29, 1973, Ct. of Claims (District of Columbia), Doc. 448–70, *Robert T. Kaufman* v. *The United States of America and Pitney Bowes, Inc., Ordibel Collators, Inc. and A. B. Dick Company.* Stipulation of dismissal, petition and first amended petition are hereby dismissed with prejudice, and as to any claims of infringement against the defendants pursuant to Rule 102(a)(1)(ii), parties notified, Aug. 29, 1973.

3,024,518. (See 2,919,534.)

3,050,063, M. E. Margraf, PINLESS BABY DIAPER, **filed** Dec. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3146, *Mildred E. Margraf* v. *Montgomery Ward and Co. et al.* Filed plaintiff's notice of voluntary dismissal pursuant to Rule 41 FRCP, Mar. 10, 1972.

3,061,139, B. Edwards, SELF-VENTILATING PACKAGE; **3,091,360,** same, NESTABLE CUP, **filed** May 4, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1161, *Illinois Tool Works, Inc.* v. *Foster Grant Company.* Filed notice of dismissal by plaintiff under Rule 41(a)(1)(i), June 18, 1973.

3,091,360. (See 3,061,139.)

3,129,442, T. L. Leckie, STENCIL PRINTING OF THICK FABRICS; **3,140,028,** same, PRINTING OF THICK FABRICS AND STENCIL PRINTING APPARATUS, **filed** Aug. 21, 1973, D.C., N.D. Ga. (Atlanta), Doc. 18829, *Champion International Corporation* v. *Bradford Dyers' Association Limited.*

3,140,028. (See 3,129,442.)

3,172,289, S. N. Blackman, GLASS THERMOMETER, **filed** May 18, 1972, D.C.N.J. (Newark), Doc. C–864–72, *Seymour N. Blackman* v. *Shulton, Inc.* Stipulation and order of dismissal of action, Aug. 27, 1973.

3,187,664, J. W. Jennings, AUTOMATIC DEEP-FAT PRESSURE COOKER, **filed** Apr. 24, 1968, D.C. Kans. (Wichita), Doc. W–3990, *Jiffy Chicken, Inc.* v. *George A. Moore and Control Manufacturing and Sales, Inc.* Judgment, ordered, patent invalid, Claim 7 of patent is invalid and defendants have infringed Claim 7 of patent, complaint dismissed, Aug. 21, 1973.

3,197,809, Corn and De Lay, CHICKEN PICKING MACHINE; **3,218,668,** Engkjer, Furlong and Zebarth, FEATHER PICKING METHOD; **3,235,904,** Brown and Corn, PICKING MACHINE WITH MULTIPLE FINGER ACTION; **3,277,515,** Engkjer, Furlong and Zebarth, FEATHER PICKING APPARATUS, **filed** Apr. 11, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–67, *Gordon Johnson Company* v. *Stork Boxmeer N.V. and Stork Inter-America Corp.*

3,218,668. (See 3,197,809.)

3,235,904. (See 3,197,809.)

3,238,408, P. J. Kayatt, FLICKER GLOW LAMPS, **filed** Sept. 14, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73C–1382, *Duro-Test Corporation* v. *Yorkville Industries, Inc.*

3,277,515. (See 3,197,809.)

3,325,988. (See 2,919,584.)

3,325,989. (See 2,919,534.)

3,369,582, C. E. Giangiulio, TOMATO SLICER, **filed** Feb. 11, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c291, *Systematic Tool & Machine Company et al.* v. *Walter Kidde & Company, Inc.* Order cause stricken from the Court call without prejudice with leave to reinstate upon the motion of any party, Oct. 12, 1972.

3,393,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, **filed** July 10, 1973, D.C. Ariz. (Phoenix), Doc. C–73–421 Phx, *Semi-Elements, Inc. et al.* v. *Motorola, Inc. et al.* Decision: Complaint dismissed with prejudice, Aug. 22, 1973.

3,404,868, Belongia and Pikoske, HYDRAULIC JACK; **3,506,126,** Serfass, Troutner and Lindsay, CLOSED RECIRCULATING HEMODIALYSIS SYSTEM; **3,563,482,** S. H. Auld, MAGNETIC TAPE CARTRIDGE CONSTRUCTION, **filed** Aug. 22, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2003–EAC, *Certron Corporation* v. *The Gates Rubber Company and Gates Learjet Corporation.*

3,458,102, Zanger and Szasz, SEMICONDUCTOR WAFER PICK-UP AND BONDING TOOL, **filed** Nov. 30, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2681–CC, *Kulicke & Sofa Industries, Inc.* v. *Gaiser Tool Company.* Filed stipulation for judgment; final judgment and order dismissing complaint with prejudice and counterclaims are dismissed with prejudice except in the event of another or further action on patent, Aug. 30, 1973.

3,503,084, J. R. Meinwieser, INFLATABLE CUSHION; **D. 216,525,** same, CUSHION, **filed** Jan. 27, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c235, *Better Sleep Inc.* v. *Richard A. Meyer, etc.* By agreement, order cause dismissed, Oct. 16, 1972.

3,504,818, H. Crisci, TAMPER PROOF BOTTLE CLOSURE; **D. 221,516,** same, JUG OR SIMILAR ARTICLE, **filed** May 19, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–388, *Hi-Tech Industries, Inc. and Honeywell Farms, Inc.* v. *Harry Crisci and Northern Engineering and Plastics Inc.*

3,506,126. (See 3,404,868.)

3,540,756, Stout and Brunk, AXLED VEHICLE SUPPORT FRAME ASSEMBLY, **filed** Aug. 24, 1973, D.C. Kans. (Wichita), Doc. W–4918, *Stoutco, Inc.* v. *York Manufacturing Co., Inc.* Order, action is hereby dismissed without prejudice, Aug. 23, 1973.

3,563,365, H. T. Loberg, ACCUMULATING CONVEYOR, **filed** June 22, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1626, *Henry Thomas Loberg* v. *Rheem Manufacturing Company.* **Same, filed** Aug. 24, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2179, *Henry Thomas Loberg* v. *Daniels Material Handling Inc. et al.*

3,563,482. (See 3,404,868.)

3,595,438, Daley and Miller, AUTOMATIC DETERGENT DISPENSER SYSTEM, **filed** Jan. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c81, *Economics Laboratory Inc.* v. *Calgon Corporation.* On motion of plaintiff order cause dismissed, Mar. 27, 1972.

3,652,825, H. M. Layton, LAMINAR GAS FLOW RINSING AND DRYING VESSEL, **filed** Aug. 27, 1973, D.C., S.D.N.Y., Doc. 73–C–3724, *Cone Mills Corp.* v. *Troy Textiles.*

3,665,443, A. A. Galvin, ULTRASONIC INTRUSION ALARM, **filed** Aug. 24, 1973, D.C. Colo. (Denver), Doc. C–5306, *Aerospace Research, Inc.* v. *Sontrix, Inc.*

3,680,213, K. O. Reichert, METHOD OF GROOVING SEMICONDUCTOR WAFER AND FOR THE DIVIDING THEREOF, **filed** Sept. 7, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–1594 SAW, *Karl O. Reichert* v. *Intersil, Inc.*

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D. 216,525. (See 3,503,084.)

D. 221,516. (See 3,504,818.)

Certificates of Correction for the Week of Apr. 2, 1974

Re. 27,644	3,742,673	3,759,715	3,768,311
Re. 27,724	3,743,070	3,760,024	3,768,616
D. 225,760	3,743,513	3,760,033	3,768,787
D. 226,416	3,743,557	3,760,144	3,768,789
D. 228,227	3,743,851	3,760,158	3,768,921
3,558,602	3,745,024	3,760,311	3,768,923
3,615,775	3,745,152	3,760,593	3,769,043
3,617,933	3,746,218	3,760,613	3,769,073
3,619,200	3,746,278	3,760,692	3,769,078
3,632,566	3,746,574	3,760,788	3,769,079
3,646,064	3,746,732	3,760,991	3,769,099
3,647,437	3,747,636	3,761,028	3,769,147
3,651,030	3,748,249	3,761,064	3,769,169
3,657,364	3,749,311	3,761,466	3,769,199
3,663,157	3,749,632	3,761,476	3,769,276
3,663,527	3,749,684	3,761,543	3,769,332
3,663,529	3,749,852	3,761,795	3,769,374
3,663,531	3,751,378	3,762,398	3,769,544
3,666,584	3,751,529	3,762,475	3,769,585
3,668,539	3,752,087	3,762,540	3,769,980
3,671,253	3,752,121	3,762,559	3,770,003
3,675,670	3,752,329	3,762,723	3,770,655
3,679,778	3,752,905	3,762,824	3,770,834
3,688,542	3,753,144	3,762,863	3,770,845
3,692,530	3,753,388	3,763,213	3,770,898
3,697,735	3,753,417	3,763,432	3,771,212
3,700,642	3,753,655	3,763,467	3,771,401
3,701,054	3,753,970	3,763,679	3,771,474
3,703,491	3,754,038	3,763,695	3,771,736
3,703,854	3,754,560	3,763,905	3,771,759
3,715,277	3,754,913	3,763,912	3,771,906
3,719,228	3,755,046	3,763,999	3,771,914
3,719,441	3,755,084	3,764,306	3,771,935
3,719,450	3,755,347	3,764,514	3,771,958
3,721,781	3,755,422	3,764,724	3,772,233
3,725,366	3,756,436	3,764,784	3,772,244
3,726,298	3,756,823	3,764,868	3,772,274
3,727,794	3,757,142	3,764,876	3,772,286
3,728,528	3,757,194	3,764,991	3,772,342
3,728,649	3,757,341	3,765,967	3,772,421
3,729,180	3,757,536	3,766,051	3,772,455
3,730,908	3,757,570	3,766,429	3,772,497
3,732,174	3,757,678	3,766,532	3,772,610
3,735,624	3,757,804	3,766,632	3,773,138
3,735,889	3,757,808	3,766,713	3,773,244
3,738,020	3,757,809	3,766,784	3,773,505
3,738,359	3,758,100	3,766,851	3,773,700
3,738,435	3,758,151	3,766,893	3,774,015
3,738,479	3,758,631	3,766,974	3,774,221
3,738,722	3,758,789	3,766,980	3,774,230
3,739,012	3,758,857	3,767,118	3,774,685
3,740,267	3,759,021	3,767,178	3,774,779
3,740,338	3,759,029	3,767,361	3,774,845
3,740,609	3,759,047	3,757,456	3,774,984
3,741,783	3,759,232	3,767,629	3,775,168
3,741,879	3,759,555	3,767,891	3,777,070
3,741,913	3,759,608	3,767,971	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents, Washington, D.C. 20545

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Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

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PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 16, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-08-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-19-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-08-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-02-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-08-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-02-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-06-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-27-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-13-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	3-15-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-21-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-16-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-01-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-08-73

Expiration of patents: The patents within the range of numbers indicated below expire during April 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,787,000 to 2,790,970, inclusive
Plant Patents..... Numbers 1,586 to 1,597, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 2, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T921,001

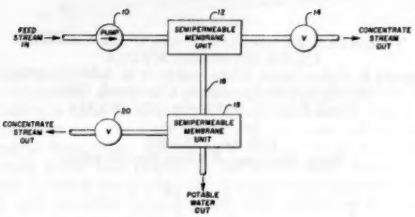
MANUFACTURE OF POTABLE WATER FROM SEA WATER

Richard G. Devaney, 238 Hammond Ave., Kingsport, Tenn. 37660

Filed Oct. 19, 1972, Ser. No. 298,915

Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—23

1 Sheet Drawing. 5 Pages Specification



Potable water is manufactured from sea water by passing it serially through two reverse osmosis units. The product of the first unit is of sufficient purity and under sufficient pressure as the result of the first unit pressurization to enable the second unit to be operated without repressurization.

T921,002

PROCESS FOR PRODUCING BUTYLATED HYDROXYANISOLE AND HIGH 3-ISOMER CONTENT

James Michael Coe, 2152 Swannanoa Ave, and Charles Edward Osborne, 1540 Belmeade Drive, both of Kingsport, Tenn. 37664

Continuation of application Ser. No. 156,131, June 23, 1971. This application Dec. 22, 1972, Ser. No. 317,560

Claims priority, application Great Britain, June 23, 1972, 29,614/72

Int. Cl. C07c *43/20*
U.S. Cl. 260—613

No Drawing. 7 Pages Specification

Process for preparing butylated hydroxyanisole (BHA) of high 3-isomer content, comprising providing an agitated reaction system of t-butylhydroquinone and dimethyl sulfate in an organic solvent and a limited amount of water, and slowly adding thereto aqueous sodium hydroxide or other hydroxide over a period of from about 1 to about 3.5 hours while maintaining the system at a relatively low temperature of from about 30 to 50° C., the total amount of water in the reaction system being from about 2.5 to about 5 parts per 10 parts of dimethyl sulfate, the amount of dimethyl sulfate being from about 1 to about 3 moles per mole of hydroxide, and the t-butylhydroquinone being in slight excess of from about 0.1 to about 0.5 mole per mole of hydroxide.

T921,003

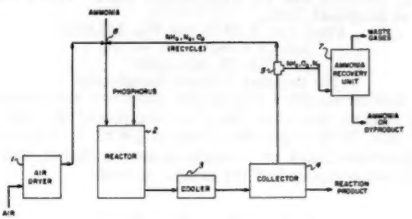
PRODUCTION OF NITROGEN-PHOSPHORUS COMPOUNDS

Harry T. Lewis, Jr., 802 Meadow Lane, and John G. Getsinger, 420 Eason, both of Florence, Ala. 35630

Filed Mar. 16, 1973, Ser. No. 341,908

Int. Cl. C05f *3/00*
U.S. Cl. 71—32

3 Sheets Drawing. 27 Pages Specification

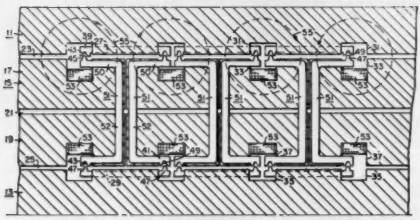


A vapor phase reaction process for production of concentrated nitrogen-phosphorus compositions. The process involves simultaneous reaction of elemental phosphorus with a low proportion of input ammonia and an excess of oxygen (air) in a single-stage reactor. Input oxygen (air) is in the range from greater than about 120 percent up to about 800 percent (all percents by weight), and most preferably 375 percent of that required to yield a O_2:P_4 mole ratio of 5. The quantity of input ammonia is in the range from greater than about 50 and less than about 80 percent of that required to yield a N:P atomic ratio of 2. The reactor (tube) is maintained at about 500° to 1300° F. and has a maximum surface area:volume ratio of about 0.8 $in.^2/in.^3$. Retention time of gases in reactor ranges from about 0.5 to 3.5 seconds at operating conditions, but 1 second is most preferred. Product of the reaction gases is collected as dry, white, amorphous solid. Products contain 14 to 16 percent N, 31 to 33 percent P, and up to 91 percent total plant nutrient content ($N+P_2O_5$ equivalent). Water solubility of the solid products is in the range from about 90 to 100 percent. Greenhouse tests indicate that the products are fully effective as fertilizer.

T921,004
SEGMENTED MAGNET HOMOPOLAR TORQUE CONVERTER

Cecil J. Mole, Monroeville, and William C. Brenner, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1973, Ser. No. 346,534
Int. Cl. H02k *31/00*
U.S. Cl. 310—178
2 Sheets Drawing. 3 Pages Specification



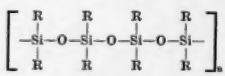
A homopolar motor and a homopolar generator are concentric and radially displaced from one another to provide a torque conversion arrangement. The motor and generator circuits are internally connected by stationary conductors to provide a closed loop current path.

T921,005
POLYESTER GEL COATS

Francis J. Sheme, 529 Fulton Ave. 37660, and Saundra L. Hillman, Rte. 13, 4422 Harbor Drive 37664, both of Kingsport, Tenn.

Filed Apr. 2, 1973, Ser. No. 347,091
Int. Cl. C08g *31/06, 47/10*
U.S. Cl. 260—827
No Drawing. 9 Pages Specification

Silicone modified unsaturated polyesters are prepared by reacting polyesters, the glycol component of which is at least 50 mole percent neopentyl glycol, 2,2,4-trimethylpentane-1,3-diol or 1,4-cyclohexanedimethanol with a silicone compound of the general formula



wherein at least one R is hydroxy or alkoxy from C_1 to C_{10} and the remaining R's are hydrogen or other organic radicals having from 1–40 carbon atoms, and *n* is an integer sufficient to result in a molecular weight of from 500 to 1000.

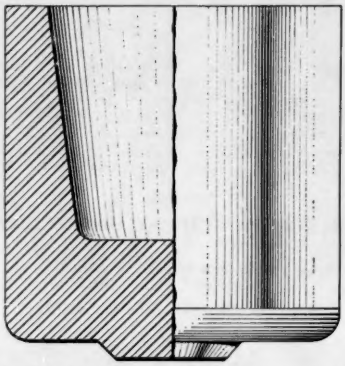
The silicone modified polyesters are blended with polymerizable vinyl monomers to form gel coats having good physical properties.

T921,006
COMBUSTION CRUCIBLE MATERIAL

Jerry W. Wimberley, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 30, 1973, Ser. No. 350,546
Int. Cl. H01b *1/00*; B01l *11/02*
U.S. Cl. 252—513
1 Sheet Drawing. 6 Pages Specification

A crucible for the analysis of combustible materials comprising a container, said container being constructed of ceramic materials containing a suitable metal in an amount sufficient to produce heat in said ceramic material when said crucible is placed in a suitable electrical field. The ceramic material containing a suitable metal in an amount sufficient to produce heat in a suitable electrical field is also claimed. A preferred metal is iron, and

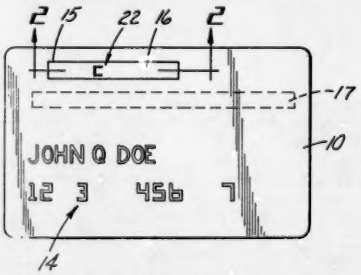


preferably, said iron is present in an amount equal to about 5 to 20 weight percent of the ceramic material.

T921,007
VISUALLY READABLE MAGNETIC CREDIT CARD STORAGE MEDIA

Jerrold S. Foley, Stow, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 31, 1973, Ser. No. 393,315
Int. Cl. B44c
U.S. Cl. 156—63
1 Sheet Drawing. 5 Pages Specification



Variable information is encoded on a credit card by a method allowing visual reading. The technique involves constructing a cavity within the core of a credit card such that the laminated surfaces completely enclose a quantity of a specific paste material. This paste material includes a mixture of magnetizable iron particles suspended in an oil solution which acts as a vehicle for the iron particles. The mixture also contains titanium dioxide which is white in color and thus acts as a pigment as compared to the iron particles. A credit card thus constructed is capable of receiving and retaining information visually in accordance with the physical distribution of the iron particles. Such information would be encoded onto the credit card by moving a magnetic material, having a surface formation corresponding to the information desired to be encoded, into contact with the surface of the credit card. The magnet will cause the iron particles to congregate at the inside surface of the credit card lamination. Elimination or change of the encoded information may be effected by subjecting the credit card, with its fluid paste, to an alternating magnetic current thus causing the iron particles to be randomly disbursed in the fluid.

REISSUES

APRIL 2, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

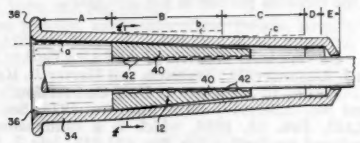
27,954
ANCHOR FOR POST-TENSIONING PRESTRESSED CONCRETE

William F. Kelly, New Orleans, La., assignor to Kelly Systems, Inc., New Orleans, La.

Original No. 3,524,228, dated Aug. 18, 1970, Ser. No. 743,406, July 9, 1968, which is a continuation-in-part of application Ser. No. 490,421, Sept. 27, 1965, now Patent No. 3,399,434. Application for reissue Nov. 19, 1971, Ser. No. 200,565

Int. Cl. F16g *11/02, 11/04*

U.S. Cl. 24—126 **14 Claims**



An anchor for post-tensioning prestressed concrete including a case having a central bore through which a tendon passes, the internal wall of the case defining the central bore being tapered in a manner to form a compound angle with respect to the longitudinal axis of the case, a chuck comprising chuck segments positioned within, and movable longitudinally with respect to the case, the inner faces of the chuck segments being provided with a series of teeth engageable with the outer surface of the tendon which passes through the case and chuck, the chuck segments being made of a ductile material to effect conformation thereof to the inner wall of the case and tendon, and to distribute the forces exerted by the chuck segments on the tendon over the length thereof.

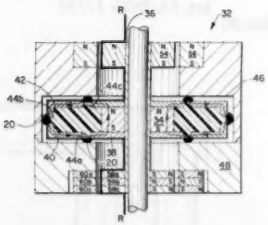
27,955
BEARING ARRANGEMENT WITH MAGNETIC FLUID DEFINING BEARING PADS

Ronald E. Rosensweig, Summit, N.J., assignor to Ferrofluidics Corporation, Burlington, Mass.

Original No. 3,612,630, dated Oct. 12, 1971, Ser. No. 5,167, Jan. 23, 1970. Application for reissue May 19, 1972, Ser. No. 255,247

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **25 Claims**



A bearing wherein a fluid bearing pad is sealed between two bearing surfaces, such as between an inner race and an outer race. A permanent magnet and permeable pole pieces define a magnetic circuit which circuit provides for the flow of magnetic flux across at least one of the bearing surfaces. A magnetic gap on the bearing surface through which the magnetic flux flows defines a predetermined continuous peripheral pattern. The magnetic flux is concentrated at the gap and a magnetic fluid is captured therein. The other bearing surface engages the magnetic fluid in sealing relationship and the fluid-bearing pad is sealed between the bearing surfaces and within the periphery defined by the magnetic fluid seal.

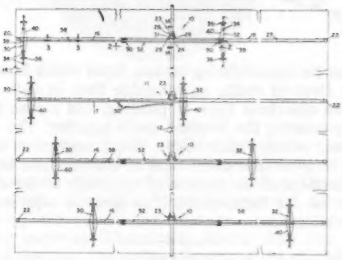
27,956
REVERSIBLE IRRIGATION LINES

Gregory J. Wieck, Enterprise, Oreg. 97828

Original No. 3,447,751, dated June 3, 1969, Ser. No. 654,809, July 20, 1967. Reissue No. 27,059, dated Feb. 16, 1971, Ser. No. 866,411, Sept. 12, 1969. This application for reissue May 27, 1971, Ser. No. 147,641

Int. Cl. A01g *25/02*

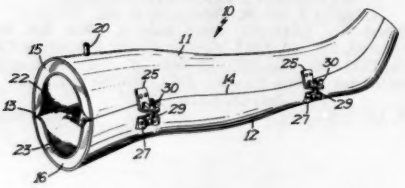
U.S. Cl. 239—212 **32 Claims**



A long hose having sprinklers at both ends forms, with a cable running over a reversible, powered capstan, an endless, reversible towline. The length of the hose is about one-half of the length of the area to be irrigated and the hose is advanced through an injection tube at the central portion of the area to be irrigated, and water under pressure supplied to the tube enters the hose through check valves in thick-walled coupling portions spaced along the hose. The check valves are in the form of elastic sleeves fitting in the coupling portions, each sleeve normally covering two oppositely disposed openings in the coupling portion and adapted to buckle from the higher water pressure in the injection tube to admit water into the hose. Each sleeve preferably has stiff backing plates on its inside and plugs on its outside filling the openings in the coupling portion. The openings preferably are elliptical. Washing chambers at the ends of the injection tubes wash the hose before it enters the seals in the injection tubes. In one construction, two hoses with sprinklers are disposed in parallel relationship in one side of a field with two cables connecting their ends and forming an endless towline therewith, one cable being on a capstan of a drive unit midway between two sides of the field. Two other parallel hoses and cables are positioned in the other half of the field and are pulled by a second capstan of the drive unit. In another construction, a power

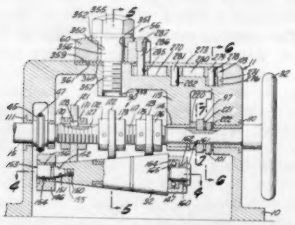
unit midway between two sides of the field pulls two parallel cables to pull two hoses through injection tubes from one side of the field to the center of the field. The injection tubes then are disconnected from a fixed pipeline in the first half of the field, the cables are disconnected from the hoses, the hoses and injection tubes are towed by a tractor to the second half of the field, the injection tubes are connected to a pipeline in the second half of the field, the cables are connected to the other ends of the hoses, and the power unit pulls the hoses to the power unit from the far side of the second half of the field.

27,957
BI-VALVED CAST
Leighton W. Larson, Waconia, Minn.
Original No. 3,580,248, dated May 25, 1971, Ser. No. 780,335, Dec. 2, 1968. Application for reissue Dec. 15, 1971, Ser. No. 208,487
Int. Cl. A61f *5/04*
U.S. Cl. 128—89 **11 Claims**



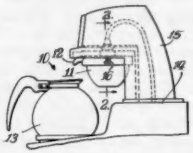
A cast for immobilizing broken limbs which includes a pair of bivalved shells, an inflatable liner in each of the shells, an absorbent liner or padding, and means for releasably securing the bivalved shells together. The cast is reuseable, permits convenient visual inspection of the broken limb without destruction of the cast, and provides for adjustment of the volume of the inside cavity and the pressure on the immobilized limb through adjustment of the inflatable liners.

27,958
POWDER COMPACTING PRESS
Paul Vinson, Orange, Calif., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.
Original No. 3,415,142, dated Dec. 10, 1968, Ser. No. 618,230, Feb. 23, 1967, which is a continuation of application Ser. No. 529,735, Feb. 24, 1966, which is a continuation of application Ser. No. 450,427, Apr. 23, 1965, both now abandoned. Application for reissue Dec. 9, 1970, Ser. No. 96,677
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 R **7 Claims**



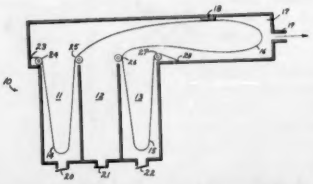
A press for compacting powder material having a plurality of die or mold cavities and a slide or flipper assembly including a powder material hopper, an anvil, and a pick-up head positionable over the die cavities. In a first position of the flipper assembly the die cavities are filled with powder material from the hopper, in a second position of the flipper assembly the anvil is positioned over the die cavities and punches or movable die portions disposed each in a die cavity are displaced in unison to compact the powder material against the anvil and in a third position of the flipper assembly the pick-up head is disposed over the die cavities and the compacted articles are ejected into the pick-up head. The [An automatic] powder compacting press *of the invention further has* [having] an actuating mechanism for actuating reciprocating punches, filling and ejecting mechanism and the like, such actuating mechanism comprising a cam shaft having a threaded portion and at least one cam mounted on the cam shaft and longitudinally adjustable along the threaded portion of the cam shaft, a lever actuatable by the cam and provided with an elongated cam follower having a surface disposed for engagement with the cam, the angular motion of the lever being adjustable by adjusting the cam along the threaded portion of the cam shaft.

27,959
BEVERAGE BREWING APPARATUS
Edwin J. Alexander, Jr., Evanston, and Harvey R. Karlen, Chicago, Ill., assignors to Cory Corporation
Original No. 3,502,017, dated Mar. 24, 1970, Ser. No. 800,352, Feb. 10, 1969, which is a continuation of abandoned application Ser. No. 651,813, July 7, 1967. Application for reissue Feb. 11, 1972, Ser. No. 225,682
Int. Cl. A23f; A47j *31/00*
U.S. Cl. 99—295 **25 Claims**



A beverage brewing apparatus having a brewing chamber in which is removably disposed a filter bag charge package and a supply means for delivering brewing liquid to the chamber to brew the beverage within the bag. The apparatus includes means for discharging the brewed beverage from the chamber.

27,960
CONTINUOUS TAPE SYSTEM
Ivan O. Fieldgate, Halesite, N.Y., assignor to Potter Instrument Co., Inc., Plainview, N.Y.
Original No. 3,184,131, dated May 18, 1965, Ser. No. 217,903, Aug. 20, 1962. Application for reissue Dec. 3, 1971, Ser. No. 204,765
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **6 Claims**



A tape handler for an information processing apparatus includes a substantially air-tight enclosure which in-

cludes means for storing at least one loop of an elongated tape adapted to store information along a portion of the loop. Within the enclosure is an information processing station which includes transducer means for transferring the information. Means are provided for clamping a portion of the tape on one side of the loop in a fixed position in the enclosure. Fluid control means are also provided for moving tape in the enclosure to the information processing station, whereby the tape is moved out of the means to store the loop and past the information processing station in a predetermined mode of operation when the fluid control means are actuated in accordance with a predetermined schedulde.

27,961

ELECTROLYTIC CELL FOR SHARPENING THE EDGE OF A RAZOR BLADE

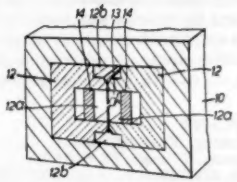
Barry William Lovekin, High Wycombe, England, assignor to Wilkinson Sword Limited, London, England

Original No. 3,470,081, dated Sept. 30, 1969, Ser. No. 536,054, Mar. 21, 1966. Application for reissue Aug. 25, 1970, Ser. No. 66,909

Claims priority, application Great Britain, Aug. 2, 1963, 30,658/63; May 14, 1964, 20,032/64; Mar. 30, 1965, 13,324/65

Int. Cl. C23b *5/58*

U.S. Cl. 204—206 **6 Claims**



An electrolytic cell for the electroforming or electrofinishing of the cutting edges of razor blades is so constructed that there is no physical contact between the electrodes of the cell and the razor blades during the process. This is achieved by providing a first chamber for containing electrolyte with which the anode is in contact and a second chamber for containing electrolyte, isolated from the electrolyte in the first chamber, with the cathode in contact with the electrolyte in the second chamber. A razor blade is supported with the edge which is to be electroformed or electrofinished in the electrolyte in the second chamber whilst a portion of the blade behind the edge is in contact with the electrolyte in the first chamber. In this way current flows from the anode through the electrolyte in the first chamber to the portion of the blade behind the cutting edge through the blade to the edge which is to be electroformed or electrofinished and thence through the electrolyte in the second chamber to the cathode.

27,962

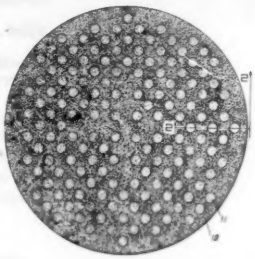
ABRASIVE DISC

Leroy M. Kubsh, Beloit, Wis., by Litton Industries, Inc., Hartford, Conn., assignee

Original No. 3,426,486, dated Feb. 11, 1969, Ser. No. 411,466, Nov. 16, 1964. Application for reissue Mar. 5, 1973, Ser. No. 338,375

Int. Cl. B24b *55/02;* **B24d** *5/00, 7/00*

U.S. Cl. 51—356 **7 Claims**



Abrasive disc for use on disc-type surface grinding machines in which the grinding operation is performed by the annular surface of the abrasive disc. The abrasive disc consists of a body of abrasive material. Distributed uniformly throughout the abrasive disc are inserts of abrasive material substantially harder than that of the body of the disc. The softer abrasive of the disc body will wear more rapidly than that of the inserts, leaving the inserts to perform the grinding operation. The space between the inserts provides for the circulation of coolant to carry away metal chips and abrasive particles from the body of the disc as well as from the inserts.

PLANT PATENTS

GRANTED APRIL 2, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,535
PHILODENDRON PLANT
Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810
Filed Apr. 10, 1972, Ser. No. 242,847
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

The disclosure herein is of a Philodendron plant characterized by its resistance to wilting in low moisture and at high temperatures, its slow growth and retention of form indoors, thick, rubbery, generally long arrowhead shaped leaves which are olive grey, and the petioles and stems likewise olive grey as to the top six or seven leaves, with the bottom leaves being greyish olive green.

3,536
CHRYSANTHEMUM PLANT
Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, Chicago, Ill.
Filed Aug. 10, 1972, Ser. No. 279,513
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—77 **1 Claim**

A new variety of *Chrysanthemum morifolium* for greenhouse culture as a pot plant, distinguished by its relatively large pure white flower of semi-incurved form which can be brought to bloom the year around with photoperiod control, the new plant having a dependable nine-week response.

3,537
CARNATION PLANT
Alexandre Barberei, La Londe, France, assignor to Laboratoire de Physiologie Vegetale de la Londe Societe Civile Agricole, La Londe, France
Filed Nov. 10, 1972, Ser. No. 305,348
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—73 **1 Claim**

A new variety of carnation plant originated as a sport of the unpatented variety Don Diablo (Baropat 0082F) and distinguished by its very large flower and the stability of its intense red color in wintertime.

PATENTS

GRANTED APRIL 2, 1974

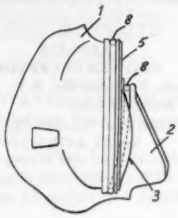
GENERAL AND MECHANICAL

3,800,329

DIVER'S MASK

Roberto Semeia, Rapallo, Italy, assignor to AMF Mares Sub S.p.A. Via Cerisola Borghetto, Rapallo, Italy

Filed July 6, 1972, Ser. No. 269,409
Claims priority, application Italy, July 6, 1971, 12795/71
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 W **4 Claims**



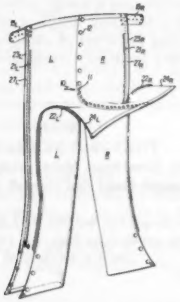
A diver's mask comprising a rubber face piece having a nose portion and a front opening to accomodate a rigid spectacles-like frame, having an inverted-V notch at the nose root zone. The said frame is provided with an outer peripheral groove passing above the apex of said inverted V-notch, for housing a flexible strap tightly compressing the periphery of the rubber face piece front opening against the grooved rim of the said rigid frame.

3,800,330

ACTION JEANS

Donal L. Bowcut, 111 S. George St., Charles Town, W. Va.

Filed Feb. 22, 1972, Ser. No. 228,128
Int. Cl. A41d *1/06*
U.S. Cl. 2—227 **4 Claims**



Action jeans formed of two basic side pieces joined at the crotch seam and each formed into a leg portion by a slide-fastener outseam and with no seam or interruption on the adjacent, inner-leg surfaces.

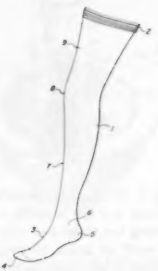
3,800,331

NOVEL SELF SUPPORTING ELASTIC SURGICAL STOCKING

Lorraine Taddeo, Rochester, N.Y.

Filed Nov. 22, 1971, Ser. No. 201,021
Int. Cl. A41b *11/00;* **A61f** *13/08*
U.S. Cl. 2—240 **4 Claims**

A novel self supporting elastic surgical stocking is described. The stocking has a support portion attached to the top of the body portion of the stocking. The support portion is designed in a manner which permits it to keep the stocking uniformly supported over the leg yet provides no obstruction or tightening about the leg and permits free circulation of air over the skin. The support portion comprises an annular band of substantial width having two types of smaller annular areas. One type ofsmaller annular area is comprised of interwoven vertical weft and horizontal warp strips (threads). The horizontal warp threads are made from an elastic material having a relatively high coefficient of static friction with respect to the skin. The horizontal warp threads are woven in a manner such that portions are intermittently exposed on the inner surface of the annular band and the remaining portions of the threads are intermittently insulated from the inner surface by overlapping portions of the vertical weft threads. The second type of smaller annular area is comprised of substantially vertical weft threads only. The diameter of the annular band or the support portion is no less than the diameter of the adjacent portion of the stocking to which the band is attached. The pressure applied to the limb by the band is insufficient to impede circulation of the blood. Also, the pressure is no greater than the pressure applied by other portions of the stocking.

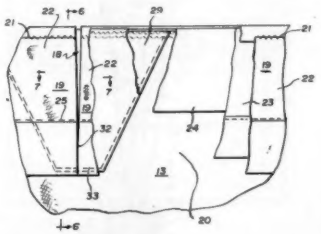


3,800,332

EXPANDABLE GARMENT WAISTBAND

Sanford I. Forrest, 3 Merrill Ln., Woodbury, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,256
Int. Cl. A41f *5/00*
U.S. Cl. 2—237 **3 Claims**



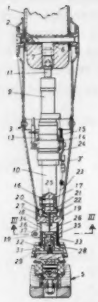
An expandable waistband for a garment. Resilient expandable strips at slits in the waistband expand to accommodate stresses caused by movement of the wearer or by changes in the wearer's girth.

3,800,333

ARTIFICIAL LEG

Karl Axel Friberg, Oskarshamn, Sweden, assignor to Aktiebolaget K.A. Friberg, Vaxjo, Sweden

Filed Dec. 15, 1971, Ser. No. 208,325
Claims priority, application Sweden, Jan. 7, 1971, 94/71
Int. Cl. A61f 1/08
U.S. Cl. 3—21 3 Claims



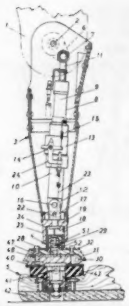
An artificial leg — of modular structure — for above-knee amputees comprising a thigh section, a shank section, and a knee joint connecting the thigh and shank sections. The shank section is formed with an ankle to which is journalled a foot section. A mechanism is provided to bring about controls over the shank section motions, said mechanism being housed in a shell-shaped calf section constituting the upper part of the shank. The ankle has a cylindrical top portion received in a sleeve in the lower portion of the calf section for securing and adjusting said ankle relatively the calf section. At the lower end of the calf section is also arranged a base designed and serving to receive and secure a fork-like attachment means in which the lower end of said mechanism is journalled.

3,800,334

ARRANGEMENT IN FEET FOR LEG PROSTHESES

Karl Axel Friberg, Oskarshamn, Sweden, assignor to Aktiebolaget K.A. Friberg, Vaxjo, Sweden

Filed Dec. 15, 1971, Ser. No. 208,364
Claims priority, application Sweden, Jan. 7, 1971, 95/71
Int. Cl. A61f 1/08
U.S. Cl. 3—23 8 Claims



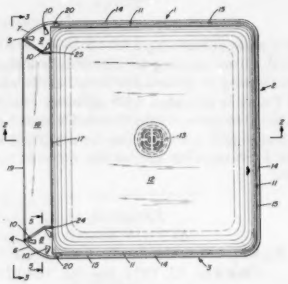
An artificial leg for above-knee amputees comprising a thigh section, a shank section and a knee joint connecting the thigh and shank sections. The shank section is formed with an ankle to which a foot section is pivotally mounted by means of a horizontal shaft in said ankle. A mechanism is provided to bring about control over the shank section motions during swing and stance phases, said mechanism being housed in a shell-shaped calf section constituting a part of the shank. The improved alignment provided by the artificial leg in accordance with the invention is obtained by positioning the horizontal ankle shaft ahead of the weight supporting line passing through the thigh section, the knee joint shaft, and the ankle and by articulating the lower end of the ankle which is shaped as a plate, to a plate arranged on the foot section by means of the horizontal shaft, in addition to which a resilient means is provided behind said horizontal shaft between the foot and ankle plates for forcing the plates apart.

3,800,335

SHOWER RECEPTOR

Anthony Buonaura, Baldwinsville, N.Y., assignor to Formica Corporation, Cincinnati, Ohio

Filed Apr. 21, 1972, Ser. No. 246,374
Int. Cl. A47k 3/23
U.S. Cl. 4—146 7 Claims



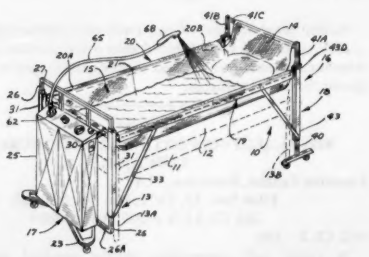
A shower receptor comprising a bottom floor, an upright wall circumscribing the periphery of said floor, a lip on three sides of said wall forming a trough between said wall and said lip, a ledge and connecting flange at the fourth side of said wall, stile-receiving members at each end of said ledge and knob-like members positioned inside said stile-receiving members, is disclosed.

3,800,336

PORTABLE BED BATH

Julian S. Hoxeng, Moorhead, Minn., assignor to Bertha J. McCarthy, Thousand Oaks and Carroll J. Cass, Los Angeles, both of, Calif.

Continuation-in-part of Ser. No. 152,296, June 11, 1971, abandoned. This application Sept. 23, 1971, Ser. No. 183,182
Int. Cl. A47k 3/06
U.S. Cl. 4—177 15 Claims



A portable bed bath used for bathing facilities for bedridden patients, comprising a mobile frame, which is folded for

storage and which can be opened and positioned properly along the bed while the patient is in bed. A waterproof sheet forming the bath tub is fastened to the frame after the frame has been properly positioned. The unitary folding frame eliminates the necessity of assembling a variety of individual pieces to support the waterproof sheet which forms the tub, thereby minimizing the time required of the attendant, and simplifying the operation of giving a bath to a bedridden patient.

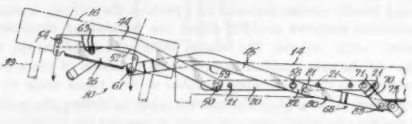
ERRATUM

For Class 4—287 see:
Patent No. 3,800,339

3,800,337
CONVERTIBLE SETTEE-BED

Ned W. Mizelle, High Point, N.C., assignor to The Seng Company, Chicago, Ill.

Continuation-in-part of Ser. No. 241,530, April 6, 1972, abandoned. This application Oct. 12, 1972, Ser. No. 296,761
Int. Cl. A47c *17/16, 21/02*
U.S. Cl. 5—43 **24 Claims**

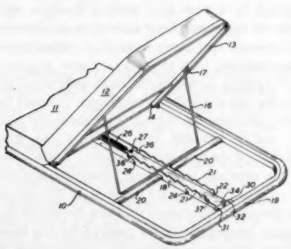


A convertible settee-bed for recreational vehicles or other comparably restricted living areas has a cushioned back rest that rolls over about 275° or 280° on a pair of four bar linkages from an upright cushion-forward settee position behind a cushioned seat to a horizontal cushion-up bed position forward of the seat. As the back rest nears bed position, one of the links goes over-center and abuts a stop, while the position of the other link is such that in bed position the back rest is suspended in cantilever fashion. In a double bed structure an interference means converts the linkage mechanism from a four bar linkage to a three bar linkage during final movement of the back rest toward bed position. In a dinette unit which has two settees facing each other the back rests travel nearly vertically into bed position so that their outer ends may abut one another without interfering.

3,800,338
RELEASE MECHANISM FOR BACK REST SUPPORT

David J. Smith, Billerica, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Aug. 21, 1972, Ser. No. 282,087
Int. Cl. A61g *7/10;* **A47c** *7/02*
U.S. Cl. 5—74 **11 Claims**

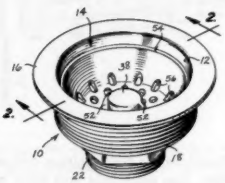


A wheeled stretcher or the like has an end portion hinged for movement to one or more adjusted Fowler, positions, the height being determined by the location of a brace, pivotally connected adjacent the middle of the hinged portion and having a lower end engageable with one or more stops at selected distances from the hinge. The release mechanism comprises means for lifting said lower end of the brace to disengage it from the stop, and the mechanism is preferably biased toward release position and held in the "stop" position by a manually releasable latch.

3,800,339
SINK STOPPER

Paul F. Bergin, 1335 Prospect Dr., Mishawaka, Ind.

Filed Jan. 24, 1972, Ser. No. 220,230
Int. Cl. A47k *1/14*
U.S. Cl. 4—287 **9 Claims**

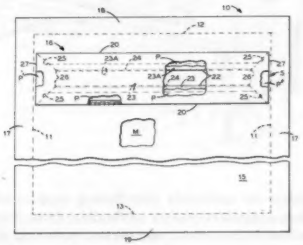


A stopper mountable in the drain opening of a basin, sink or similar receptacle. The stopper includes an annular member having a fluid opening therethrough. A threaded stem is positioned within the opening of the annular member and is held in a spaced relationship from the sides of the annular member. A plug which constitutes a part of the stopper is threaded over the top of the stem and is shiftable between a closed position in which the plug engages the annular member to plug the fluid opening therethrough and an open position in which the plug is spaced from the annular member so as to permit fluid flow through the member.

3,800,340
COMBINATION SHEET AND PILLOWCASE

Edith Valentine, 306 W. 18th St., New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,654
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 R **5 Claims**



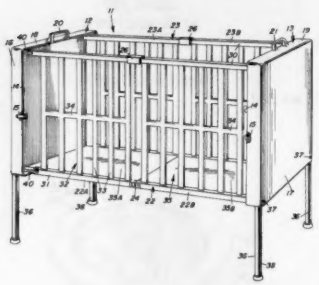
A combination sheet and pillowcase wherein the pillow receiving pillowcase is integral with the sheet; the pillowcase comprising a fabric element of such a configuration and a mode of attachment thereof to the sheet as to provide for maximum mobility of the pillow when in use and manipulation thereof similar to that possible with pillows and pillowcases which are not attached to the sheet.

3,800,341

PORTABLE COLLAPSIBLE COMBINATION CRIB AND PLAYPEN

Vito Davanzo, 473 Sunset Dr., Hallandale, Fla.

Filed Apr. 18, 1972, Ser. No. 245,212
Int. Cl. A47c *29/00*
U.S. Cl. 5—99 R **1 Claim**



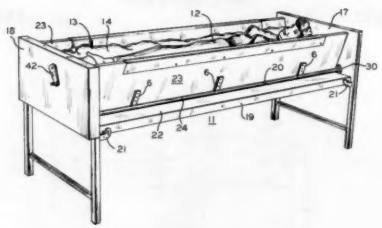
A portable and collapsible combination crib and playpen of plastic construction. The sides fold into open box-like structures which act as the head board and foot boards, respectively. The bottom is of two halves and also fold into the box-like structures and is hingedly secured thereto. The legs are extendable from corners in the box-like structures. The sides are each constructed of two hinged halves and have a grid-like configuration.

3,800,342

BODY SUPPORT CUSHIONING SYSTEM WITH SIDEBOARD POSITIONING MECHANISM

Ansis U. Tenteris, Toledo, and Bruce W. Wetzel, Millbury, both of Ohio, assignors to Jobst Institute, Inc., Toledo, Ohio

Filed Apr. 18, 1972, Ser. No. 245,157
Int. Cl. A61g *7/10*; A47c *27/08*
U.S. Cl. 5—348 WB **12 Claims**



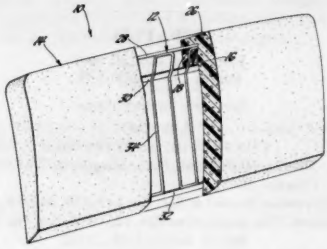
A cushion for uniformly distributing support of an invalid comprising a liquid container of flexible sheet material which is impervious to the liquid, and means to elevate side portions of the container to form a loose upper surface which can conform to the supported body portions of the invalid and support these portions as in flotation. For a constant volume of liquid in the container, the position of the side portions adjusts the depth to enable bodies of varying weight to be floated free of the underlying support surface. The means for varying the position of the sideboards applies maximum torque when the sideboards are in the horizontal position and maximum speed as the sideboards approach the vertical position.

3,800,343

VEHICLE SEAT

Donald R. Fruchte, Trotwood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1971, Ser. No. 208,368
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **1 Claim**



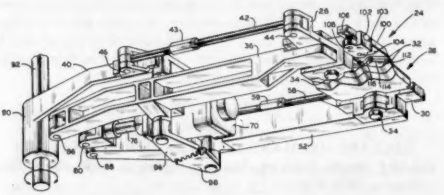
A vehicle seat includes a premolded urethane member having a plastic release material on a portion thereof and a second urethane member molded about the premolded member to form a seat cushion. The release material extends to the surface of the seat cushion and prevents cohesion of the second member to the premolded member so that those areas of the members separated by the release material define the walls of a pocket into which the seat frame is inserted for attaching the cushion to the frame.

3,800,344

METHOD OF SHEARING MOLTEN GLASS

Clarence A. Heyne, Sun City, Ariz., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 138,887, April 30, 1971, Pat. No. 3,758,286. This application Feb. 14, 1973, Ser. No. 332,370
Int. Cl. C03b *5/38*
U.S. Cl. 65—133 **4 Claims**



In preferred embodiments of the invention illustrated herein there is shown method and apparatus for shearing a plurality of gobs aligned in a row and issuing from a molten glass feeder. A pair of opposed shear carriages are provided which are movable toward and away from each other between open and shearing positions with respect to a row of gobs. A pair of opposing gob cutting surfaces for each gob to be severed are mounted on the opposed shear carriages. A lever is provided for each shear carriage having one end pivotally connected to its carriage and a portion remote from the carriage end pivotally supported on a frame structure. Each lever is operable to pivot the carriage toward and away from a gob shearing position. Means are connected to each of the shear carriages for pivoting the shear carriages on their levers to translate the arcuate motion imparted to the carrier by the levers to substantially linear motion enabling the gob cutting surfaces to substantially simultaneously engage and sever the plurality of gobs. The motion translating means preferably includes a steering link having one end pivotally connected to the shear

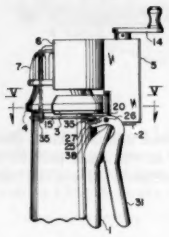
carriage a predetermined distance from the lever connection to the carriage, and a means for pivotally supporting the other end of the steering link a fixed distance from the pivotally supported other end of the lever. Novel blade structures, alignment and cooling features are also shown.

3,800,345

CHAMPAGNE CORK EXTRACTOR AND WIRE CUTTER

Jack M. Feliz, 34-808 Via Echo, Palm Springs, Calif.

Filed Sept. 13, 1972, Ser. No. 288,643
Int. Cl. B25f 1/00; B67b 7/44, 7/32
U.S. Cl. 7—14.6 7 Claims



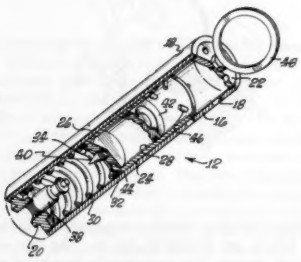
A champagne cork extractor comprising a wire cutter and a cork remover which are operated by gripping the bottle neck and a wire cutter handle in one hand and turning a cork extractor crank with the other hand.

3,800,346

SELF DESCENDING AND SURFACING WATER DEVICE

Elmer White, 94 E. Marathon Rd., Altadena, Calif.

Filed July 23, 1973, Ser. No. 382,086
Int. Cl. B63b 21/52
U.S. Cl. 9—8 R 12 Claims



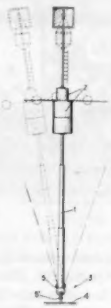
A self descending and surfacing water device for deploying instrumentation, such as a bathythermograph, including a cylinder and piston combination. The cylinder has a water port at its top end. The piston is hollow and has a closed bottom end and an opening at its top end. A spring is provided for biasing the piston upwardly within the cylinder. Water pressure forces the hollow piston downwardly against this spring, and a gas is released for driving the hollow piston upwardly in the cylinder when the device has descended to a predetermined depth. A free floating piston is disposed within the hollow piston, and the bottom of the hollow piston has an aperture so that upon the release of gas the free floating piston is driven upwardly within the hollow piston to increase the buoyancy of the device.

3,800,347

SPAR-TYPE BUOY FOR MARITIME NAVIGATION

Bernard Johan Zuurbier, Via Schwardi 70, Brescia, Italy

Filed Sept. 15, 1972, Ser. No. 289,688
Claims priority, application Italy, Feb. 29, 1972, 5133/72
Int. Cl. B63b 21/52
U.S. Cl. 9—8 R 1 Claim



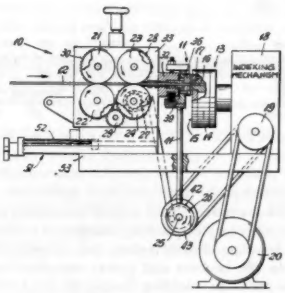
A spar-type buoy for maritime navigation, which is capable of retaining a predetermined position, which comprises a tubular metallic and tapered support for a plastic floating member, said support being connected to a sinker by means of a linked joint unit which allows the buoy to effect angular displacements at one extremity while pivoting at the opposite extremity.

3,800,348

METHOD AND APPARATUS FOR CUTTING AND INSERTING BLANKS FROM A ROD

Albert Dunkin, South Norwalk, Conn., assignor to Raybestos-Manhattan, Inc., Bridgeport, Conn.

Filed Nov. 10, 1972, Ser. No. 305,423
Int. Cl. B21k 1/44, 1/58
U.S. Cl. 10—11 T 13 Claims



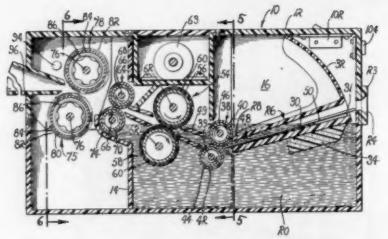
A method and apparatus for rapidly cutting a rod into individual blanks having a constant precise length and inserting each blank into one of a plurality of holders carried by a transfer mechanism. The rod is partially advanced and then cut to form the blank while the transfer mechanism is being indexed to position the next holder to receive a blank with a surface of the transfer mechanism being used to size the blank to an accurate length. The time for the holder to be maintained stationary is thus only limited to the time necessary for advancing the rod a length that is no greater than the length of the blank.

3,800,349

CREDIT CARD CLEANING SYSTEM

Parrish O. Green, 214 Burchfield St., Bakersfield, Calif.

Filed Apr. 28, 1972, Ser. No. 248,599
Int. Cl. B08b 1/02
U.S. Cl. 15—4 14 Claims



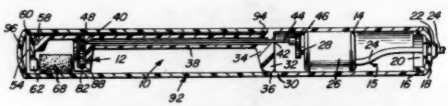
The disclosed machine has a housing with a washing component and a drying compartment. The housing has a credit card receiving slot which opens into the washing compartment. The washing compartment is filled with a cleaning solution to just below the level of the receiving slot. A receiving platform is provided which is inclined downwardly below the surface of the cleaning solution where a pair of feed rollers pass the card through a pair of scrubbing rollers and onto a pair of squeegee rollers and a pair of drying rollers. The scrubbing rollers are below the level of the cleaning solution and so rotate as to wipe the card surfaces in a direction opposite its direction of travel. The squeegee rollers and drying rollers are in the drying compartment separated from the reservoir of cleaning solution and the drying rollers have heating elements which maintain them at a predetermined temperature.

3,800,350

ELECTRIC TOOTHBRUSH

Giuseppe Francolino, 25 N. White Horse Pk., Audubon, N.J.

Filed Feb. 13, 1973, Ser. No. 332,199
Claims priority, application Italy, Apr. 27, 1972, 49981/72
Int. Cl. A46b 13/02; A61c 17/00
U.S. Cl. 15—23 7 Claims



A power operated toothbrush characterized by a hollow handle containing an insertable and removable motor or equivalent power source, head means embodying interior and exterior paired rotary brushes, an elongated restricted barrel uniting the handle and head means, and an operating connection between the brushes and power equipped handle. The head means provides shielding flanges for the brushes. Other facilities which increase the overall efficiency are provided.

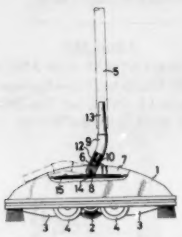
3,800,351

HANDLE DEVICE FOR OPERATING CARPET SWEEPER

Hiroshi Fukuba, 914-1 Nazukori 270-01, Nagareyama, Japan

Filed Aug. 7, 1972, Ser. No. 278,483
Claims priority, application Japan, Apr. 4, 1972, 47-33164
Int. Cl. A47l 11/32
U.S. Cl. 15—41 R 5 Claims

A handle is disclosed connected to the top of the frame body of a carpet sweeper for driving the sweeper back and forth includes a slightly bent neck in the vicinity of its lower end connected to the frame body. A pin extending from the lower end of the neck is journaled in a bearing hole formed in a short head for connecting the neck to a connecting pin extending across a groove in a top center portion of the frame body. The bending of the neck permits the handle to be swivelled to a low position relative to the frame body.

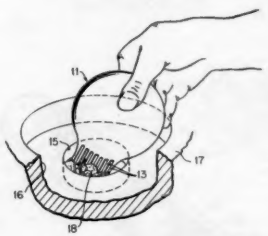


3,800,352

KITCHEN CLEANING UTENSIL

Aldo L. Bonora, 432-B Beren Rd., Walden, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,888
Int. Cl. A47l 25/00
U.S. Cl. 15—105 1 Claim



A kitchen cleaning utensil is especially designed for scraping and raking out foodstuff and the like that collects in a kitchen sink strainer. The utensil includes a head member having a circular scraping edge. The diameter of the head member is less than that of a kitchen sink strainer. A plurality of flexible, side-by-side teeth extend longitudinally from a portion of the edge of the head member. The utensil is curved about a longitudinal axis parallel to the teeth and is capable of being flexed under pressure, whereby its head member may be used for scraping foodstuff and the like from the upper sidewall of a kitchen sink strainer and the teeth may be used for raking out foodstuff and the like from the lower opening of the strainer.

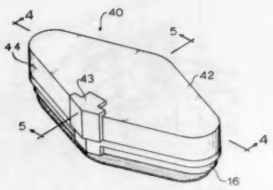
The purpose of this abstract is to enable the public and the Patent Office to determine rapidly the subject matter of the technical disclosure of the application. This abstract is neither intended to define the invention of the application nor is it intended to be limiting as to the scope thereof.

3,800,353

DIRECTIONAL BRUSH

Eric Michael Roth, R.R. No. 1, Unionville, Ontario, Canada

Filed Feb. 22, 1972, Ser. No. 227,878
Int. Cl. A46b 9/02, 17/04
U.S. Cl. 15—184 1 Claim



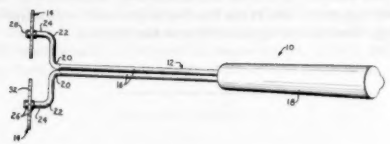
A small brush with an asymmetrical bristle direction is provided with an asymmetrical body shape and an asymmetrical cover shape to indicate the desired direction of brushing and the cover may be used as a handle or as a cover for the bristles.

3,800,354

UNIVERSAL GRILL CLEANER

Donald L. Stephens, 7806 S. College Ave., Ottawa, Kans.

Filed Sept. 22, 1972, Ser. No. 291,195
Int. Cl. A47l 17/06; A47j 49/00
U.S. Cl. 15—236 R 9 Claims



A tool for cleaning the parallel bars of a grill irrespective of the spacing between adjacent bars over a range that accommodates standard grill sizes. A pair of spaced discs are rotatably mounted on one end of an operating arm provided with a handle on its opposite end. Each disc is of a hard metal material and has uniformly spaced, semi-circular notches in its periphery, presenting radial projections between adjacent notches that are tapered to a point. The arm comprises a pair of flexible, side-by-side rods that independently support the two discs for limited movement toward and away from each other to improve the seating of the bars in the notches over the range of spacing accommodated. Using two discs, at least three bars are scraped when force is applied to the arm and it is shifted in directions parallel to the bars with the discs in engagement therewith.

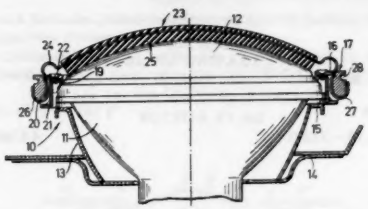
3,800,355

HEADLAMP WIPER SYSTEMS

Rudolf Lamprecht, Lubecker Strasse 4, and Lothar Reck, Hessenvig 3, both of 609 Russelsheim, Germany

Filed May 1, 1972, Ser. No. 249,345
Claims priority, application Germany, May 6, 1971, 7117683
Int. Cl. B60s 1/20, 1/44
U.S. Cl. 15—250.22 7 Claims

A headlamp wiper system in which an annular drive pulley mounted for rotation on a retainer around the rim of a headlamp is driven by an endless cable. The annular pulley carries a wiper which engages the lens of the headlamp. One



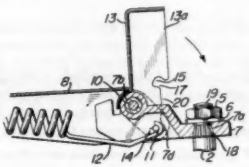
cable may be used to drive the annular pulleys of two or more headlamps, or drive arrangements utilizing two or three cables may be used.

3,800,356

WINDSHIELD WIPER FOR AUTOMOBILE OR THE LIKE

Isao Ito, 119 Kamizakitakanicho-8-chome, Handa, Japan

Filed Feb. 8, 1972, Ser. No. 224,514
Claims priority, application Japan, Feb. 19, 1971, 46-8252
Int. Cl. B60s 1/34
U.S. Cl. 15—250.34 3 Claims



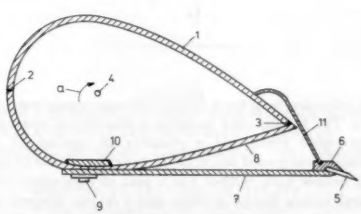
In a wiper arm of a windshield wiper comprising an arm head and a retainer, a cover of stainless steel is provided which is rotatably fixed to the arm head coaxially of the retainer to cover the arm head and its joint to a driving shaft of a wiper motor. Coating of the arm head and its nut for fastening it to the driving arm, which are exposed in the prior art, can be eliminated so that cost can be reduced, and handling of these parts in assembly can be facilitated since no care against the damage to the coated surfaces thereof is required. The overall appearance of the windshield wiper can be much enhanced because the exposed parts such as cover, retainer, arm piece and the like are all made of stainless steel.

3,800,357

DOCTOR DEVICE FOR PAPER MAKING MACHINE

Osmo Skytta, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland

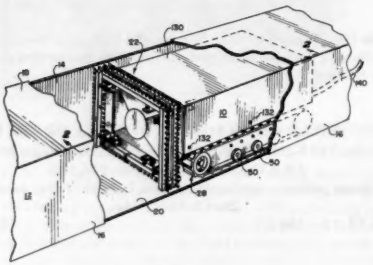
Filed Dec. 6, 1971, Ser. No. 205,165
Claims priority, application Finland, Dec. 9, 1970, 3321
Int. Cl. D21g 3/02
U.S. Cl. 15—256.51 2 Claims



A doctor device is used in a paper making machine for scraping a roll. The roll is scraped by a blade attached to one

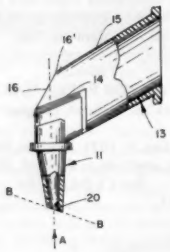
end of an elastic arm. The other end of the arm is attached to a body beam extending parallel to the roll. The portio of the beam between the attachment and the blade is convexly curved and extends away from the arm.

3,800,358
DUCT CLEANING APPARATUS
John W. Ryan, 1550 N. Lake Shore Dr., Chicago, Ill.
Filed May 8, 1972, Ser. No. 251,324
Int. Cl. A47l *5/38*
U.S. Cl. 15—312 R **4 Claims**



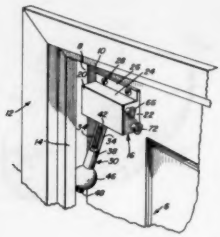
A remote-controlled, self-propelled, vehicular apparatus adapted to travel tractionally within a rectangular duct, and by a combined brushing and vacuum-cleaning operation, to remove dust and other foreign matter therefrom.

3,800,359
VACUUM CLEANER NOZZLE
Sol Howard, and Robert Schaaf, both of Brooklyn, N.Y., assignors to Air Filters, Inc., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 104,583, Jan. 7, 1971, abandoned. This application May 3, 1972, Ser. No. 250,018
Int. Cl. A47l *9/06*
U.S. Cl. 15—397 **3 Claims**



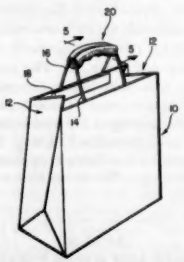
A carpeting tool for a vacuum cleaner comprising a hollow rake. The hollow rake includes a plurality of spaced hollow open-ended teeth and a plurality of spaced air passage openings interposed respectively between certain of the teeth. The hollow rake further has a pair of oppositely extending lateral hollow flange portions and a nozzle integral with and intermediary of the flange portions. The flange portions have a lowermost lateral surface from which extend the hollow teeth, and in which are formed the air passage openings.

3,800,360
SPRING-OPERATED DOOR SILENCER
Otto H. Knarreborg, P.O. Box 427, Alexandria, Minn.
Filed Dec. 29, 1972, Ser. No. 319,738
Int. Cl. E05f *5/04*
U.S. Cl. 16—83 **9 Claims**



A slam preventing noise silencing door check for retentive attachment to a spring-operated door comprising an adapter bracket capable of being fixedly mounted on a predetermined area of the jamb striking face of said door. A pendulous member or unit embodying an elongated arm. An upper end of the arm is swingably mounted on a shaft carried by said adapter bracket. The swingable lower end of the arm is provided with a cushioned bob-like bumper capable of swinging and momentarily chocking and lodging itself between contacting surfaces of the jamb and door face. The noise silencing bumper then frees and releases itself and automatically swings to and assumes a neutral out-of-the-way position. For sensitively regulated results the bracket is provided with adjustable hanger means and regulatable limit stop means.

3,800,361
HAND SAVER
Rita A. Stauffer, 5536 S. Everett, Chicago, Ill.
Filed Aug. 14, 1972, Ser. No. 280,551
Int. Cl. A47b *95/02*
U.S. Cl. 16—116 **3 Claims**



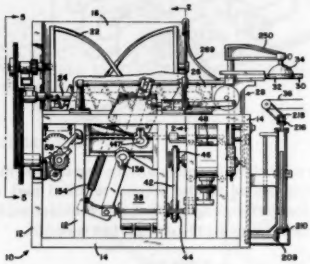
A device for use in carrying shopping bags, cartons and the like having handles of cord-like material comprises a body of flexible, resilient material having at least one pair of separated, confronting surfaces for grippingly receiving a cord-like handle therebetween.

3,800,362

PATTY MACHINE

Jackie Neal Wilson, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Oct. 12, 1971, Ser. No. 188,145
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **6 Claims**



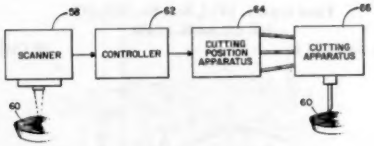
A machine for forming patties of a moldable material, such as a meat product, on a high volume basis. The machine includes a hopper having a paddle rotatably mounted in it and a feed screw leading from the bottom of the hopper to a mold charging piston and cylinder. A mold plate having a mold cavity formed in it slides back and forth over the mold charging device and receives a charge of the product each time the mold cavity communicates with the discharge opening of the charging device. A common drive is utilized for the paddle, the feed screw, the mold plate, the mold charging piston and cylinder, a knock-out device for ejecting patties from the molding plate and a conveyor for removing the molded patties away from the machine in stacks of preselected numbers.

3,800,363

TUNA BUTCHERING METHOD AND SYSTEM

James M. Lapeyre, New Orleans, La., assignor to The Laitrom Corporation, New Orleans, La.

Filed Dec. 29, 1972, Ser. No. 319,663
Int. Cl. A22c *25/18*
U.S. Cl. 17—52 **16 Claims**



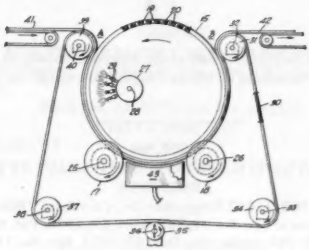
An automated butchering method and system for separating the edible loin portions of transverse tuna slices provided by subdivision of a frozen whole tuna. Each transverse slice of the principal loin bearing section of a frozen tuna is scanned to produce electrical signals representative of the boundary between the edible loin portions and the contiguous waste meat portions. Control signals can be derived from these electrical signals for government of cutting apparatus for precise separation of the edible loin portions along the detected boundary.

3,800,364

APPARATUS (DISCONTINUOUS IMPERFORATE PORTIONS ON BACKING MEANS OF CLOSED SANDWICH)

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 22,299, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,333
Int. Cl. D04h *11/00*
U.S. Cl. 19—161 P **4 Claims**



An apparatus for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that contain apertures or holes, or other areas of low fiber density, and have a plurality of patterns that alternate and extend throughout the fabric. One form of the method includes the steps of positioning the starting web between apertured forming means and a backing means that is foraminous except for a discontinuous pattern of imperforate portions, then directing fluid rearranging forces through the apertures of the forming means against the fibers of the starting web, causing some of the fluid streams to strike the imperforate portions of the backing means and all of the fluid streams ultimately to pass through the foraminous portions of the backing means. The discontinuous imperforate portions of the backing means underlie the entire area of some but not all the apertures of the apertured forming means. Each of the discontinuous imperforate portions preferably has an area at least about four times the area of an aperture of the forming means. The imperforate portions of the backing means may rise above the foraminous portions. The resulting fabric consists of fibers that have been rearranged to provide a first pattern of holes or other areas of low fiber density corresponding to the imperforate portions of the backing means and a second pattern corresponding to the apertures of the apertured forming means that overlie the foraminous portions of the backing means. When a plurality of protuberances and troughs alternate across the surface of the foraminous portions of the backing means, the fluid rearranging forces of this method and apparatus rearrange the fibers of the fibrous starting material to produce a third pattern of holes or other areas of low fiber density within the second pattern already described.

3,800,365

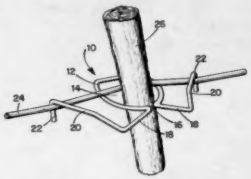
CLIP FOR ATTACHING STALKS TO A WIRE OR OTHER LIKE ELONGATED SUPPORTED MEMBER

Paul Bruggert, Junghaltz Thurenbach-St. 19, Haut-Rhin, France

Filed Feb. 22, 1973, Ser. No. 334,973
Int. Cl. A44b *21/00*; **A01g** *17/14*
U.S. Cl. 24—73 HL **2 Claims**

A clip for attaching a stalk to a wire, rope or other like elongated support member. The clip consists of a resilient wire

bent to form a wall surrounding an enclosure. The wall has a mouth formed between two abutting shoulders. The ends of



the wire are bent rearwardly at the aforesaid shoulders to form legs which terminate in hooks adapted to engage the support member.

3,800,366

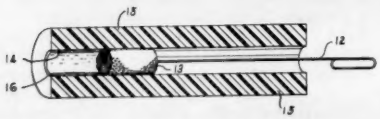
PREFORMED ROLLER BONDED TO SHAFT BY DUAL ADHESIVES

Edward D. Hill, 11212 Edgewater Dr., Cleveland, Ohio

Division of Ser. No. 32,843, April 29, 1970, Pat. No. 3,673,040. This application Dec. 29, 1971, Ser. No. 213,515

Int. Cl. B32b *1/00*; **B41f** *1/46*

U.S. Cl. 29—132 **5 Claims**



A roller, such as a printing roller, is fabricated by sliding a cylindrical body having a longitudinally extending, substantially central opening over a rigid shaft designed to support the roller during rotation or the like. The roller is preferably cut to a desired length from a preformed, relatively long section of the material. A lubricating adhesive is used for the joint purpose of first lubricating the relative sliding movement between the cylindrical body and shaft during assembly and then adhering these parts together after assembly. In the preferred practice, a wet, polymerizable adhesive coats the opening of the cylindrical body, and a second different adhesive is used on the shaft. The lubricity of both adhesives contributes to the sliding of the roller relatively to the shaft, and subsequently the two adhesives form an adhesive bond between themselves and the parts to which they are applied.

3,800,367

SLIDING CLASP FASTENER

Ernst Popovitsch, Stuttgart-Steckfeld, Germany, assignor to Dr. Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

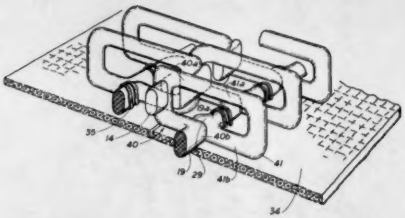
Division of Ser. No. 33,469, April 30, 1970, Pat. No. 3,666,853. This application June 8, 1971, Ser. No. 151,008

Claims priority, application Germany, May 2, 1969, 1922605

Int. Cl. A44b *19/12*, *19/04*

U.S. Cl. 24—205.1 C **1 Claim**

An elongated, plastic slide fastener stringer of the modified, continuous helix type in which each fastener element extends substantially in a plane transverse to the direction of stringer elongation, and the elements are longitudinally connected by integral portions of the helix. Each element consists of a substantially U-shaped front reverse turn formed with a coupling surface and a substantially U-shaped rear reverse turn, the reverse turns each having a first terminal part and a second terminal part, the first terminal parts being integrally joined to each other, and the second terminal parts being integrally joined to respective connecting portions. A protuberance on the second terminal part of the rear reverse turn is aligned in



the direction toward the coupling surface and beyond the connecting portion joined to the second terminal part of the reverse turn for abutting engagement, and provides anchorage for sewing thread fastening the stringer to a support.

3,800,368

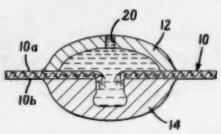
GARMENT FASTENER ASSEMBLY AND METHOD FOR MAKING THE SAME

Jack Simon, Rye, N.Y., assignor to Athlone Industries, Inc., Parsippany, N.J.

Filed July 31, 1972, Ser. No. 276,419

Int. Cl. A44b *17/00*

U.S. Cl. 24—216 **4 Claims**



A garment fastener assembly is comprised of releasably interlocked subassemblies, each subassembly including a fibrous support member and a unitary fastener in engagement both with opposed surfaces of the fibrous support member and with fibers exposed by rupture of the fibrous support member during manufacture of the subassembly.

3,800,369

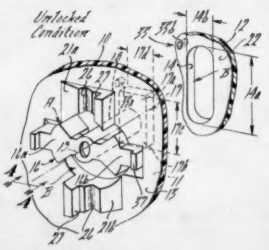
FASTENER FLASH MOLDED INTEGRAL WITH PARENT PART

Ronald F. Nikolits, Livonia, and Thomas J. Kane, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 1, 1972, Ser. No. 285,691

Int. Cl. A44b *17/00*

U.S. Cl. 24—221 R **10 Claims**



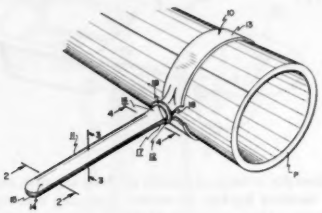
A simultaneously molded first panel and severable fastener for use in being joined to another panel. The fastener is car-

ried on the first panel in the unsevered condition by molded links, easily severable upon twisting of the fastener to engage camming means integrally molded also on the first panel. During the twisting action, the fastener is moved into a locking position in which the panels are drawn together tightly in a fastened condition. The fastener has cantilevered arms to flexibly apply force to the panels and the panels have spacers therebetween to allow the panels to flex under the influence of the forces transmitted by the fastener arms.

3,800,370
CONDUIT GRIP

Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

Filed Jan. 19, 1973, Ser. No. 324,964
Int. Cl. A44b *21/00*
U.S. Cl. 24—260 **7 Claims**

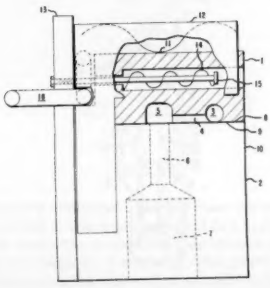


A pipe grip comprising an elongate metal strap configured to form an encompassing band integral with opposite handle halves. The handle halves are secured together by a ring which encompasses the same proximate the encompassing band portion. Raised or tapered boss portions integral with the handle halves and preferably forming portions thereof, upstand laterally from the handle halves and provide a recessed seat for the encompassing securement means. Preferably the bosses are tapered outwardly toward the encompassing band portion so that a wedging securement can be obtained.

3,800,371
FLUID JET APPARATUS FOR PROCESSING YARN

Elva Lincoln Rose, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 11, 1972, Ser. No. 270,859
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **7 Claims**

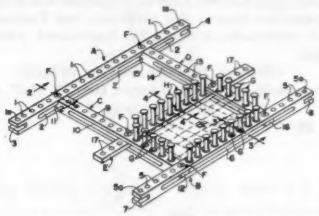


A fluid jet apparatus has a yarn passage intersected by a fluid passage for fluid treatment of yarn passing through the yarn passage. These passages are formed by grooves in one face of a cap member mounted against a mating face of a base member so that the cap member can slide over the face of the base member to a stringup position where the yarn groove is open for receiving yarn. The cap and base members are held together in operating position under positive pressure. Fluid is supplied to the fluid groove through a fluid conduit in the base member. The invention makes possible precision manufacture of apparatus having extremely hard surfaces where wear-resistance is desirable.

3,800,372
ADJUSTABLE LOOM FOR HAND WEAVING

Gilles P. Duoust, 17 Tanager Ave., No. 602, San Leandro, Calif.

Filed Jan. 22, 1973, Ser. No. 326,257
Int. Cl. D06c *3/08*
U.S. Cl. 28—15 **3 Claims**



An adjustable loom for hand weaving comprising upper and lower rails with elongated slots therein and left hand and right hand rails with tongues at their ends that are adjustably receivable in the elongated slots of the upper and lower rails or are receivable in mortised ends of the upper and lower rails. The left and right hand rails also have elongated slots adapted to adjustably receive an intermediate rail. Each of the rails has a row of openings, the openings being equally spaced from each other at the same distance for all of the rails. Headed pins are removably received in the desired openings. The pins that are received in the intermediate rail are longer than those mounted in the other rails so that the tops of all of the pins will lie in the same plane. Corner posts secure the rails together in their adjusted positions. In this manner the weaving loom may be readily adjusted for weaving articles of different sizes. Also, the loom rails may be disassembled and stored in a small space when the loom is not used.

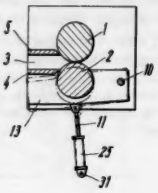
3,800,373
DEVICE FOR CRIMPING GROUPS OF SYNTHETIC FILAMENTS

Heinz Fleissner, Egelsbach, Germany, assignor to Vepa AG, Basel/Schweiz, Switzerland

Filed Aug. 4, 1971, Ser. No. 168,825
Claims priority, application Germany, Aug. 10, 1970, 2039623; Aug. 10, 1970, 2039621; Oct. 30, 1970, 2053269; Dec. 21, 1970, 2062876; Dec. 21, 1970, 2062878; Dec. 21, 1970, 2062877; Apr. 8, 1971, 2117393; Apr. 10, 1971, 2117725; Apr. 20, 1971, 2119002
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **33 Claims**

A device for crimping textile materials which comprises a pair of driven rollers in contact with each other and operatively associated with a stuffer box, said box having two plates forming walls of a compression zone or compartment

therebetween, one of said rollers and one of said plates being operatively connected to each other to form a unitary construction so that the volume of the stuffer box is automatically increased when the distance between the rollers is increased.



3,800,374

METHOD FOR PRODUCING BULKY YARN

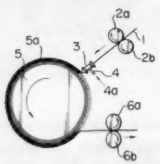
Goro Ozawa; Kenzo Kosaka, both of 1-36, Akasaka-cho; Hideo Kobayashi, 21, Kanamori-cho, all of Chigusa-ku, Nagoya-shi, Aichi-ken; Kiyoshi Adachi, 77, Obata Aza Miyanokoshi, Moriyama-ku, Nagoya-shi, Aichi-ken, and Tsutomu Okaya, 1-13-2, Kibogaoka, Chigusa-ku, Nagoya-shi, Aichi-ken, all of Japan

Filed Dec. 10, 1968, Ser. No. 782,628

Claims priority, application Japan, Dec. 13, 1967, 42-79707

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 **6 Claims**



Polypropylene multifilament yarn is continuously jetted from a jet nozzle toward a stuffing member composed of numerous stuffing elements together with super heated steam from the jet nozzle during the relative displacement of the jet nozzle to the stuffing member. The stuffing member is provided with cubical spaces for retaining the multifilament yarn. The multifilament yarn is fixed its deformation by the plastifying action of the super heated steam while being retained in the cubical spaces of the stuffing member, and next the multifilament yarn having crimps is stripped from the stuffing member. The above-mentioned process can be performed as a part of a continuous process composed of drawing and crimping, or of melt spinning, and drawing and crimping. Several types of stuffing members including a cylindrical stuffing member covered by numerous needles or honey-comb like elements, a pair of endless-belt type stuffing members, and a cage type are disclosed.

3,800,375

CROSS DYEING FIBER BLENDS OF POLYURETHANE, POLYACRYLATE OR BUTADIENE-ACRYLONITRILE COPOLYMER COATED COTTON FIBERS WITH DISPERSE AND REACTIVE DYES

Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans; John T. Lofton, and Gloria A. Gautreaux, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 196,210

Int. Cl. D04b *19/00;* **G06p** *1/38*

U.S. Cl. 28—72.16 **10 Claims**

A process has been developed for cross-dyeing cellulosic fabrics. This process consists of weaving certain polymer treated or polymer and crosslinking agent treated yarns into a fabric. Then the fabric is dyed with a disperse dye and a cotton dye. The polymer treated yarns are dyed with a disperse dye while the nonpolymer treated yarns are dyed with the cotton dye. This yields a cross-dyed fabric.

The polymer treated yarns used in weaving are produced either by direct treatment, skein treatment or by knitting a fabric, treating the knit, deknitting and using these yarns in weaving.

3,800,376

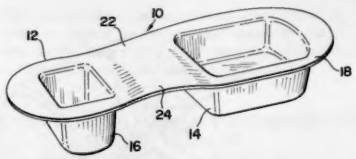
SHOE FOR SURGICAL CAST

Francis Whyte, 2 Cascade Dr., Halifax, Nova Scotia, Canada

Filed Apr. 4, 1972, Ser. No. 240,369

Int. Cl. A61f *5/04*

U.S. Cl. 128—83.5 **6 Claims**



A shoe for a surgical plaster of Paris leg cast, comprising a sheet member having an outline generally corresponding to the profile of the underside of a foot and a pair of wells in the sheet member with the edge portion of the sheet member forming a peripheral flange. One well is located to cover the weight bearing area of ball portion of the foot and the other well is located to cover the weight bearing area of the heel portion of the foot. The bottom portion of the wells lie in a bearing plane parallel to the plane of the sheet member.

ERRATUM

For Class 29—25.13 see:
Patent No. 3,800,366

3,800,377

METHOD OF MANUFACTURING BASE TERMINALS OF A MINIATURE INCANDESCENT LIGHT BULB

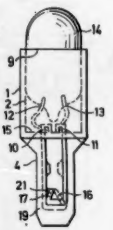
Otto Palmen, Bamberg, Germany, assignor to W. Albrecht KG, Bemberg, Germany

Filed May 24, 1972, Ser. No. 256,311

Claims priority, application Germany, Feb. 4, 1972, 2205217

Int. Cl. H01j *9/24*

U.S. Cl. 29—25.13 **6 Claims**



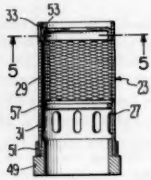
The specification describes a method for the attachment of contact members, held in a base, with electrodes passing through the glass envelope of a miniature incandescent lamp.

In accordance with the method the contact members are strips of electrically conducting material which are introduced from below through recesses in the bottom of the upper part of the base until the strips reach the upper rim of the base and are electrically connected with the electrodes. Following this with the introduction of the glass envelope in the hollow cylindrical upper part of the base the strips are drawn back. At their free lower ends they are severed and are fixed to the lower part of the base.

3,800,378
METHOD OF MAKING A DIRECTLY-HEATED CATHODE

Robert Arthur Lee, Lititz, and Albert Bazarian, Jr., Lancaster, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 81,449, Oct. 16, 1970, abandoned. This application June 7, 1972, Ser. No. 260,504
Int. Cl. H01j 9/38
U.S. Cl. 29—25.18 **2 Claims**

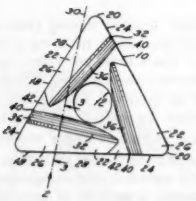


A directly-heated cathode having a very short warm-up time comprising a tubular sheet of refractory metal having an array of apertures therein defined by a grid of intersecting filaments. The filament grid may be integral with spaced end sections of the sheet, the end sections serving as heat-dam and top-cap sections of the cathode. Also included is a method of making such a cathode comprising etching the apertures in a refractory metal sheet.

3,800,379
CUTTING INSERT

David Alan Hopkins, Detroit, Mich., assignor to The Valeron Corporation, Oak Park (Detroit), Mich.

Filed Aug. 2, 1972, Ser. No. 277,276
Int. Cl. B26d 1/00
U.S. Cl. 29—95 **21 Claims**

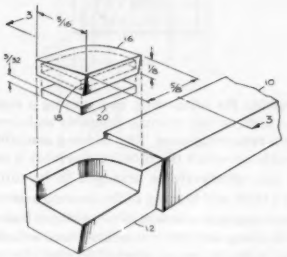


The invention comprises a cutting insert for providing positive rake cutting action when mounted in a negative rake tool holder. The insert has at least one chip control groove formed in the top face adjacent a side wall. The groove has an outer surface intersecting the side wall at an angle of less than 90° to form a cutting edge. The cutting edge initially extends downwardly along the side wall away from the cutting corner and the face. In the preferred embodiment the groove angularly intersects the adjacent side wall with the maximum groove width adjacent the cutting corner and the outer surface conical in form, the combination creating a chip with a compound curve which is more readily fractured.

3,800,380
COMPOSITION FOR CUTTING TOOL

Carl F. Cline, 2356 Welsh Ct., Walnut Creek, Calif., and Mark L. Wilkins, 1179 Burgundy Way, Livermore, Calif.

Filed Apr. 1, 1971, Ser. No. 130,280
Int. Cl. B26d 1/00
U.S. Cl. 29—95 R **9 Claims**

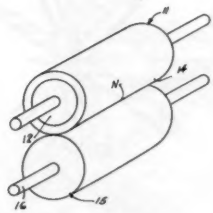


A cutting tooling is provided wherein there is a gradual transition from the hard cutting exterior material to a relatively soft interior material to provide a viscous damped cutting tool yet one having sufficient mechanical support for its cutting edge.

3,800,381
COVERED ROLL FOR PAPER MAKING

Donald A. Brafford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed June 19, 1972, Ser. No. 263,859
Int. Cl. B21b 31/08
U.S. Cl. 29—132 **1 Claim**



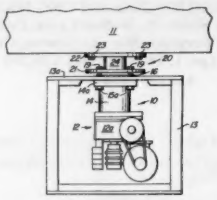
A roll and method of making the roll wherein the roll is adapted to operate at high speed and high nip pressures and has an outer cover formed of a wet lay process with a reinforcing mat of nonwoven needled polyester fibers wetted and impregnated, with a material selected from the group of depolymerized natural rubber, low molecular light weight styrene butadiene, liquid urethane and liquid polybutadiene, at room temperature and is placed on the outer surface of the roll is a wet lay-up process.

3,800,382

TURNTABLE AND BEARING ASSEMBLY

Eugene S. Biggs, Salt Lake City, Utah, assignor to Dynapac, Inc., Salt Lake City, Utah

Filed Apr. 24, 1972, Ser. No. 246,611
Int. Cl. B23p *11/00, 7/00*
U.S. Cl. 29—148.4 A 1 Claim



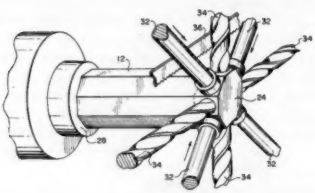
An assembly for supporting and turning a rotating display sign, radar dish, or like rotating assembly and a method for installing and removing same. The bearing assembly is coupled to a turntable on which the rotating assembly is mounted. The turntable can selectively be arranged to be turned and supported by a shaft and bearing of the bearing assembly, or it can be lowered onto and connected to a rotator frame which supports the bearing assembly, turntable, and rotating assembly. When the turntable is connected to the rotator frame the weight of the rotating assembly is shifted from the bearing assembly and is placed on the rotator frame allowing the bearing assembly to be removed therefrom for repair or replacement. The turntable can be used to permanently, immovably mount a sign or the like or to immovably mount such an assembly in advance of a later installation of a bearing structure and a rotating drive structure.

3,800,383

METHOD OF MAKING A TRUNNION AND BEARING BODY ASSEMBLY FOR A UNIVERSAL JOINT

Sarosh M. Khambatta, Chicago, and Brian L. Asimor, Melrose, both of Ill., assignors to Enrique H. Orazco, Chicago, Ill., a part interest

Filed Sept. 6, 1972, Ser. No. 286,671
Int. Cl. B23p *11/00, 17/00, 19/00*
U.S. Cl. 29—148.4 A 1 Claim



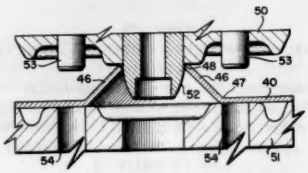
The trunnion and bearing body assembly includes a circular or octagonal center block formed from bar stock and having four equally spaced bores which extend into but not through the center block. The universal joint also includes four trunnions each made from circular cross section bar stock and having a reduced diameter pin-forming section which is received in one of the bores in the center block. A larger diameter portion of each trunnion is receivable in an opening in the yoke forming part of a universal joint. The method includes the steps of forming the center block and the trunnions from two lengths of standard bar stock.

3,800,384

BEARING STRUCTURE AND METHOD OF FORMING SAME

John V. Keleshian, Elmwood Park, Ill., assignor to Aetna Bearing Company, Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 312,039
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A 10 Claims



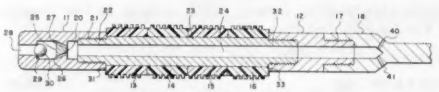
A method as disclosed of forming a bearing structure having at least one race element thereof, constructed of a pair of sheet metal blanks having mating annular configurations forming the race for the bearing. The mating annular configurations are formed by first stamping a conical preform portion radially about a hole within the blank. The conical preform is then reverse bent while restraining the extent thereof in a space which causes reverse forging of the material of the preform so that the thickness thereof increases during bending for added strength of the bearing structure.

3,800,385

THERMOPLASTIC PUMP PLUNGER HAVING SPIRAL THREADS AND METHOD OF MAKING SAME

Bobby L. Douglas, Ennis, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 20, 1972, Ser. No. 235,898
Int. Cl. B28b *17/02*
U.S. Cl. 29—156.4 R 8 Claims



Adjacent plunger sections having alternate right and left hand spiral threads are loosely fitted on a cylindrical mandrel, one end of which has a threaded valve cage with a ball and seat therein, a shoulder section being threadedly engaged with the other end of the mandrel. The plunger sections are compressed by further increasing rotational pressure to the threaded shoulder section. Plunger sections are essentially nylon (polyamide) having a fiber glass filler material. Because of the creep of the material, end compression is applied in an amount which causes a squeeze of approximately 1/32 inch per foot of plunger section to purposely induce creep in the manufacturing process. After apprxoimately twenty-four hours, during which the material creeps about 75 percent of its one year creep, the plunger assembly is centerless ground to the desired outside diameter.

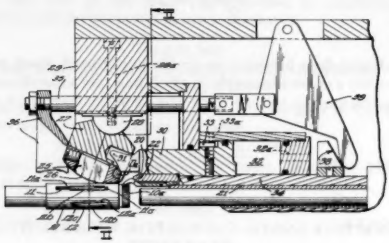
In addition to the plunger sections being alternately right and left hand threaded, each section has its end portion unthreaded. The unthreaded end portion provides for pressure change and also a space for sand to fall out. The use of the unthreaded section and the alternately changing thread directions causes flow reversals and turbulent flow conditions

which reduce slippage rate and increase the efficiency of the pump. The alternate right and left hand portions reduce the torque in the system and also reduce the flow rate through the spiral by causing direction changes.

3,800,386
METHOD AND APPARATUS FOR MANUFACTURING VALVE COMPONENTS

Arthur E. Bishop, 5516 Westwood Ln., Birmingham, Mich.

Division of Ser. No. 802,359, Feb. 26, 1969, Pat. No. 3,591,136. This application Mar. 16, 1971, Ser. No. 124,903
Int. Cl. B21d *53/00*
U.S. Cl. 29—157.1 R **3 Claims**

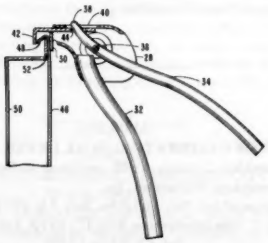


A valve core for co-operation with a hydraulic valve sleeve, wherein the core is provided with a plurality of longitudinally extending grooves constructed for co-operation with mating radially inwardly facing grooves in the valve sleeve, wherein the grooves are constructed by a rolling operation in a manner permitting almost limitless variations in exact valve-land contour. The invention deals with the valve core thus constructed and a preferred valve slot configuration, along with a novel method and apparatus for the construction thereof.

3,800,387
CRIMPING DEVICE

James R. Hamilton, 18006 Vanowen, Reseda, Calif.

Filed Sept. 5, 1972, Ser. No. 286,073
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **5 Claims**

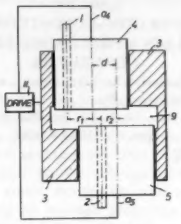


This invention consists of a hand-operated crimping device used to close a flange, such as on a car door, comprising cooperating dies where the lower die is a foot coupled to a movable handle and the upper die is the lower frame of the tool.

3,800,388
APPARATUS FOR ALIGNING TWO OPTICAL COMPONENTS

Manfred Borner; Joachim Guttmann; Werner Loffler, all of Ulm, Donau, and Dietmar Gruchmann, Ulm, Bofingen, all of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 30, 1972, Ser. No. 310,782
Claims priority, application Germany, Nov. 30, 1971, 2159327
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **16 Claims**



Apparatus for aligning two optical components along a common optical axis includes two holders each holding a respective one of the optical components at a fixed distance from the axis of rotation of the respective holder. The distance *d* between the axes of the two holders has a value such that

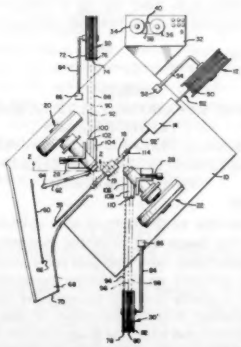
$$r_1 - r_2 \quad d \quad r_1 + r_2$$

where r_1 and r_2 are the distances between each of the optical components and the axis of rotation of its respective holder. The holders are rotated with respect to each other until the optical components become optically aligned.

3,800,389
ELECTRICAL LEAD AND HARNESS MANUFACTURING

Ronald Carl Brehm, Carlisle; Earl Ernest Folkenroth, Harrisburg, and Earl William Wagner, Annville, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 1, 1972, Ser. No. 249,016
Int. Cl. B23p *19/00*
U.S. Cl. 29—203 D **14 Claims**



A tape controlled, measured length of wire is automatically fed from a reel to a position between laterally spaced bench presses and within a pair of transfer arms embracing the wire.

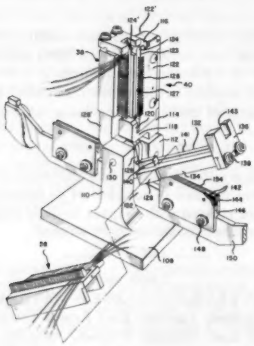
The wire is severed and insulation stripped away from the line of severance of both the newly severed lead and the leading end of the wire. Respective transfer arms for the new wire lead and the leading end of the wire rotate the severed and stripped ends to opposite sides of the wire feed line and beneath respective presses. Multiple unit, shiftable electrical terminal applicators are selectively shifted under tape control relative to the line of action of each press to present the selected terminal from one of respective multiple terminal strips to the severed and stripped wire ends with the terminals crimped to the trailing end of the wire lead and the leading end of the wire upon depression of the press rams.

3,800,390

APPARATUS FOR CONNECTING CONDUCTORS TO TERMINALS IN A PRELOADED ELECTRICAL CONNECTOR

James Joseph Johnston, Cheshire, Conn., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 14, 1973, Ser. No. 332,537
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 P **12 Claims**



Conductors are connected to terminals in a preloaded electrical connector by means of a fixture having a conductor jig removably mounted thereon. The conductors are located in slots in the jig and the jig is thereafter removed from the fixture and placed in a conductor insertion apparatus which transfers the conductors from the jig to the terminals in the connector and connects the individual conductors to the terminals.

3,800,391

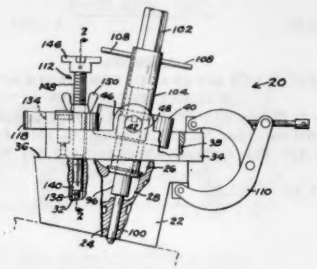
APPARATUS FOR REPAIRING VALVE GUIDE OPENINGS IN CYLINDER HEADS

Richard W. Westbrook, 30273 Rosemond, Franklin, Mich.

Filed Jan. 6, 1972, Ser. No. 215,829
Int. Cl. B23b *41/00*
U.S. Cl. 29—255 **42 Claims**

A base anchorable to the bottom of a cylinder head supports a carrier for linear and rotatable movement for alignment with an underlying valve seat and valve guide opening. A guide sleeve is shiftable on the carrier perpendicular to the valve seat axis. A probe inserted through the sleeve into the valve guide opening refines alignment of the sleeve. The sleeve has a tapered end engageable against the valve seat for final centering of the sleeve. The sleeve is arranged to guide a combined drill and reamer for enlarging the valve guide opening and to guide a tool by which a valve guide bushing is driven into the enlarged opening.

The base has a plurality of apertures through which anchor rods can be inserted into variously located bolt holes in different cylinder heads. Some of the apertures are contained in



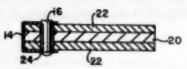
indexing discs for selective positioning thereof. Each anchor rod has a collet expansible in a bolt hole and a nut threadable against the base to anchor the base on the cylinder head.

3,800,392

GRAPHITE AND/OR CARBON DISK WITH REMOVABLE WEAR FACES

Albert W. Cook, Tallmadge, and Joseph F. Dernovshek, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 87,126, Nov. 5, 1970, Pat. No. 3,712,427.
This application Oct. 20, 1972, Ser. No. 299,369
Int. Cl. B22d *19/10*
U.S. Cl. 29—401 **1 Claim**



The invention comprises a brake disk assembly in the form of a carbon or graphite disk which is provided on both sides with thin wear plates of carbon or graphite material. The plates are either in segmented or full circle form and are secured to the core by rivets and bushings which also secure the keyway drives of the disks.

3,800,393

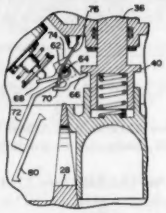
METHOD OF CALIBRATING DUAL LEVER MECHANISM

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 162,556, July 14, 1971, Pat. No. 3,747,617. This application July 17, 1973, Ser. No. 380,029
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **1 Claim**

Method of calibrating a dual lever mechanism having first and second levers rotatable between first and second positions whereby the levers exhibit lost motion therebetween comprising bending one of the levers so as to decrease the amount of lost motion, rotating the first lever to its second position and

holding it, moving the second lever into engagement with the first lever, and forcing the second lever to its first position



such that one of the levers is deformed to establish a calibrated interrelationship between the levers.

3,800,394

METHOD OF MAKING SLIDE FASTENER FROM CONTINUOUS CHAIN

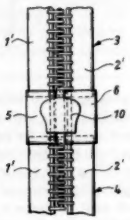
Wolfgang Ruhrmann, Stuttgart, Germany, assignor to Dr.-Ing. Josef Ruhrmann, Stuttgart, Germany

Filed Jan. 2, 1973, Ser. No. 319,998

Claims priority, application Germany, Jan. 13, 1972, 2201410

Int. Cl. B23p *11/00, 15/00*

U.S. Cl. 29—408 **6 Claims**



Continuous slide fastener chain is cut to individual lengths, and two severed lengths are spaced apart to form a gap between the respective terminal parts of the two carrier tapes and interlocked rows of fastening elements. A connecting strip of pliable material is superimposed on the severed terminal parts of each carrier tape to bridge the gap and fastened to the terminal parts. When the connecting strips are cut transversely, the individual fastener lengths are provided with the free ends necessary for many applications without removing fastener elements from the continuous chain. Top or bottom stops may be mounted on the connecting strips prior to or after their fastening to the carriers, or such stops may be formed under heat and pressure from the material of the connecting strips during the fastening of the same to the carriers.

3,800,395

METHOD OF ESTABLISHING A SHIELDED CONTAINER WALL OPENING

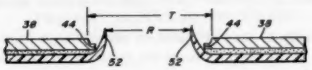
Herbert Gayner, Monroeville, and David A. Smith, Penn Hills, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 190,479, Oct. 19, 1971, Pat. No. 3,735,893. This application Sept. 15, 1972, Ser. No. 289,330

Int. Cl. B23p *17/00*

U.S. Cl. 29—413 **6 Claims**

A method of establishing a shielded container wall opening including providing a metal container wall panel having an adhesively bonded protective layer selected from the group consisting of polyolefin copolymers of polyolefin-ethylene and ionomers of polyolefin. Providing a score line defined removable sector within the metal panel and an operating pull tab secured thereto. Thermally treating the container wall having the integral opening device at about 275° to 375°F for about 0.2 second to 4 minutes and preferably about 300 to 350°F for about 0.5 to 3 minutes. Operating the pull tab to initate fracture of the score line and establish an opening in the container wall. Simultaneously elongating portions of the protective layer disposed in a generally underlying position with respect to the score line and severing the same to provide a shielding edge which is disposed protectively against the opening defining wall of the metal container wall panel. Feathering preferably including an average projection of about .002 to .010 inch beyond the metal opening defining wall.



3,800,396

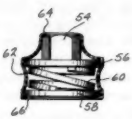
METHOD OF ASSEMBLING AND USING A PREARRANGED FASTENING ELEMENT PACKAGE

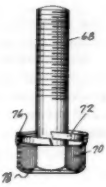
William R. Puchner, Elm Grove, Wis., assignor to Charter Manufacturing Company, Inc., Milwaukee, Wis.

Filed July 21, 1972, Ser. No. 274,068

Int. Cl. B23p *17/00*

U.S. Cl. 29—413 **3 Claims**





A group of fastening elements such as a nut, a washer, and a lock washer are held together in axial alignment by a sleeve of shrinkable material which embraces the fastening elements and is shrunk by heat or the like to bear against the outer periphery and ends of the grouping of fastening elements. The fastening elements are prearranged in serial order to fit in cooperative relationship with a related fastening element such as a bolt. An opening is left in at least one end of the shrunk plastic sleeve so that the group of fastening elements can be assembled as a unit with the related fastening element while held in prearranged relationship by the sleeve.

3,800,397

METHOD FOR MAKING APPLIANCE FOR LINEAR BODIES

James C. Poffenberger, Cleveland Heights, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Division of Ser. No. 190,351, Oct. 18, 1971, abandoned. This application July 3, 1972, Ser. No. 268,627

Int. Cl. B23p *17/00*

U.S. Cl. 29—416 **2 Claims**

A method of making a helical appliance comprises forming continuous strips of resilient material into continuous helices

and cutting the helices at spaced intervals to form helical legs. Other continuous strips are formed into continuous generally sine wave undulations and then cut between undulations to

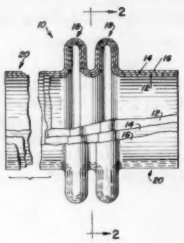
define generally U-shaped bights. A helical leg is then joined to each end of the bight to form the appliance. Other features are disclosed.

3,800,398

METHOD OF FABRICATING MULTIPLE-PLY BELLOWS

Edward F. Harrington, Jr., 2154 Emerson Ave., Louisville, Ky.

Filed Dec. 14, 1972, Ser. No. 315,259
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **4 Claims**



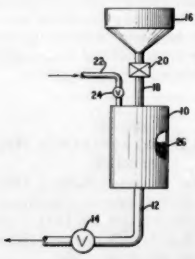
In the fabrication of a bellows having concentric radially spaced inner and outer plies from a bellows having concentric inner, intermediate, and outer plies, the plies are sectioned into longitudinal sections, the sections of the intermediate ply are removed from between the sections of the inner and outer plies, and the sections of the inner and outer plies respectively are welded together to reform the inner and outer plies.

3,800,399

POWER DECAPSULATION AND RECOVERY METHOD AND APPARATUS

Ronald W. Warrick, 203 Meadowview Ln., Phoenixville, Pa., and Robert N. Faust, 835 Mitchell Ave., Morton, Pa.

Filed Sept. 5, 1972, Ser. No. 285,991
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **2 Claims**



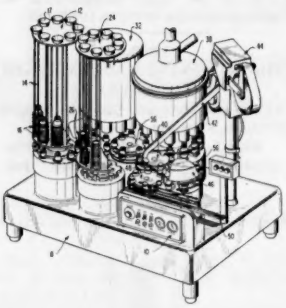
The disclosure is directed to a method and an apparatus for recovering the contents of filled, closed, two component, hard gelatin capsules by inducing a higher pressure inside than outside of the capsules causing the gases inside the capsules to expand and force apart the body and cap components of the capsules. The contents may then be separated from the body and cap sections by well known means, such as screening and the like.

3,800,400

AUTOMATIC PLASTIC BOTTLING SYSTEM AND METHOD

Robert J. Mistarz, Northbrook, and Albert B. Mojonnier, Sr., Chicago, both of Ill., assignors to Koehring Company, Milwaukee, Wis.

Division of Ser. No. 154,058, June 17, 1971, Pat. No. 3,744,212. This application Mar. 13, 1973, Ser. No. 340,925
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **2 Claims**



A method and apparatus for performing a plurality of successive processing operations with individual container sections or joined container sections forming containers. The processing operations include the dispensing of container sections and the assembly, filling and sealing of the containers. On a single platform, a plurality of spaced processing units are rotatably mounted. Each unit includes a plurality of circumferentially spaced carrier stations for moving container sections or containers about the unit axis of rotation. A plurality of spaced star wheel transfer units are disposed intermediate and adjacent the processing units. The star wheels receive container sections or containers from and deliver them to the processing units at transfer zones defined generally tangentially of each of the processing units and an adjacently disposed star wheel unit. The transfer unit is rotatably mounted on the platform and includes a plurality of circumferentially spaced carrier stations for moving the container sections or containers about the axis of rotation. The circumferential spacing of said carrier station on the transfer and processing units is substantially the same throughout; and the transfer and processing units are geared together for simultaneous rotation, with said carrier stations of each of the processing units and an adjacently disposed transfer unit rotating in opposite angular directions. The initial processing units are comprised of first and second denesters for supplying individual container sections to an adjacent transfer unit.

3,800,401

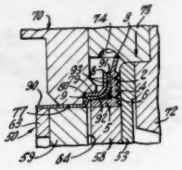
METHOD OF MAKING CONTAINER CLOSURE CONSTRUCTION

John Jesevich, Cicero, and Vyto Simkus, Chicago, both of Ill., assignors to American Flange & Manufacturing Co., Inc., New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,258
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 **8 Claims**

A tag ring element having a neck portion and a base portion and bordering the openings in container walls and methods

and apparatus for at least partially forming the same during the application of the closure elements to the container walls, including means for automatically feeding and positioning blanks for such tag ring elements in position for securement during the securing of closure elements about said container wall openings. The tag ring elements may be preformed to varying degrees depending upon the means for holding them in the dies and may be of varying thicknesses, depending on whether they serve as the sole securing neck for securing closure flanges to container wall openings, whether they reinforce lightweight necks formed in the container wall, or



whether they principally serve to provide eyelets for the attachment of various elements thereto. In a particular instance, the tag ring element flat blanks are fed into the dies which perforate container walls, draw necks up from the same form and secure the tag ring elements thereto, and secure closure flanges within such necks in one stroke of a press. Particular feeding and holding means for the tag ring elements for the automatic application of the same to container wall necks simultaneously with the application of the closure flange to the opening being formed, is provided in the instance of single stroke application of closures to the container walls.

3,800,402

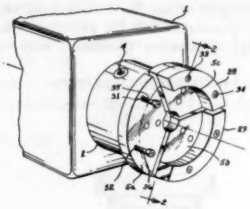
UNIVERSAL RING JAWS

Vernon B. Bailiff, 3608 W. Harmont Dr., Phoenix, Ariz.

Division of Ser. No. 185,972, Oct. 4, 1971, Pat. No. 3,747,945. This application May 16, 1973, Ser. No. 360,808

Int. Cl. B23p *9/00*

U.S. Cl. 29—445 **4 Claims**



A method for chucking work in lathes is disclosed. Each of a plurality of segmented circular backing plates, which backing plates are interconnected by a plurality of guides, are attached to one of the jaw mountings of the lathe. A segment of a segmented ring is secured to each of the segmented backing plates and machined to receive a work piece. The backing plates are inwardly radially displaced to permit mounting of the work piece upon the segmented ring and then outwardly radially displaced to draw the segmented ring against the work piece. Where the work piece is mounted externally rather than internally, the above mounting process is reversed. The guides interconnecting the backing plates are tightened to rigidly secure the backing plates to one another and, in combination with the segmented ring, form a solid mounting for the work piece. The work piece may now be machined without any danger of misalignment, wobble, or flutter of the mounting assembly.

3,800,403

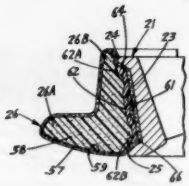
METHOD OF MAKING A SUTURING MEMBER AND MOUNTING THE SUTURING MEMBER ON A DEVICE

Lawrence Anderson, Minneapolis; William A. Andres, Hopkins; Edith R. Artmann, Delano; Francis W. Child, Maple Plain, and Una N. Swanson, Minneapolis, all of Minn., assignors to Medical Incorporated, Minneapolis, Minn.

Filed Oct. 10, 1972, Ser. No. 296,002

Int. Cl. B23p *9/00*

U.S. Cl. 29—445 **14 Claims**



A suturing member and method of making the suturing member on an implantable prosthetic device, as a heart valve. The suturing member has a porous fabric cover surrounding a semi-rigid plastic core. An annular sleeve of heat shrinkable plastic material is located within the cover to hold the cover in assembled relation with the device in a manner which allows for rotation of the device after the suturing member has been attached to the tissue. The seam of the cover is located between the annular sleeve and the device. In the method of making the suturing member, the cover is located around the core and annular sleeve before it is mounted on the device. After the suturing member is mounted on the device, it is heated to cure the plastic core, bond the core to the inner surface of the cover, and heat shrink the sleeve around the device.

3,800,404

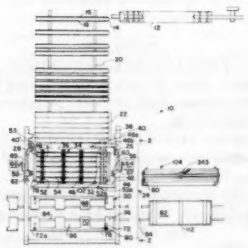
PLATE PRODUCTION SYSTEM WITH LOW LEVEL BUNDLING, STACKING, AND TRANSPORT

Bartholomew Frank Quintilian, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 13, 1972, Ser. No. 314,712

Int. Cl. B23q *3/00*

U.S. Cl. 29—464 **11 Claims**



A composite plate production system having at a welding station a combined pressure-assembler, welding clamp, and precision stacker ram-carriage unit, feeding a low-level self loading and unloading shuttle by means of a stacking table

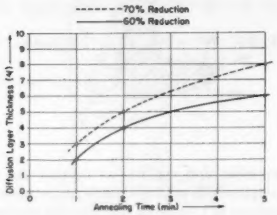
located above the shuttle, the shuttle being arranged for conveying and off-loading bundles onto a transfer table having a pivotal edge-angle for stabilizing bundles rotated during hoist pick-up in preparation for edge-down bundle storage.

3,800,405

METHOD FOR PRODUCING COPPER-CLAD ALUMINUM WIRE

Gerhard Ziemek, Hannover, Germany, assignor to Kabel-Und Metallwerke Gutehoffnungshuette A.G., Hannover, Germany

Filed Oct. 26, 1971, Ser. No. 192,188
Int. Cl. B21d *39/04*
U.S. Cl. 29—473.9 **8 Claims**



A copper band is formed around an aluminum core wire and the single seam in the sheath material is welded without bonding of the sheath and core, care being taken that all surfaces are clean and maintained free of oxides. The copper tube is reduced to the diameter of the aluminum core. This composite wire is then passed through a plurality of drawing dies which reduce the diameter of the wire, preferably at least 50 percent, care being taken to prevent the copper sheath from tearing. The drawing operation produces, depending on the reduction rate, an initial or a complete bond between the core and sheath. Subsequently, the clad wire is either subjected to a limited diffusion heat treatment, conditions of the heat treatment being controlled to produce a complete and flawless bond between the sheath and core but, at the same time, avoiding the formation of any $CuAl_2$, a phase which is brittle or is annealed to get the required grade. Generally, the diffusion layer on either side of the sheath-core interface is limited to about 10 μ, preferably less.

3,800,406

TANTALUM CLAD NIOBIUM

Melvin A. Hagan, Palos Verdes Peninsula, and Roy I. Batista, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 61,459, Aug. 5, 1970, Pat. No. 3,706,539, which is a continuation-in-part of Ser. No. 809,039, March 20, 1969, Pat. No. 3,579,808. This application Dec. 20, 1971, Ser. No. 210,271. The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 **4 Claims**

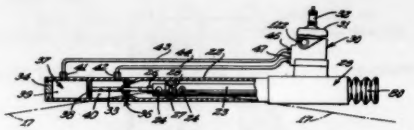
A composite metal article is made by applying tantalum metal sheet to the surface of niobium metal and the two metals are diffusion bonded in a protective environment. The bonded metals may be cold worked to produce the final fabricated article. The final article is coated with an aluminide or a silicide coating.

3,800,407

METHOD OF ADOPTING MANUAL RACK AND PINION STEERING GEAR TO ACCOMMODATE A POWER MODE OF OPERATION

Peter J. Dumeah, Royal Oak, Mich., assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 62,924, Aug. 11, 1970, Pat. No. 3,709,099. This application June 14, 1972, Ser. No. 262,603
Int. Cl. B23k *31/02*
U.S. Cl. 29—481 **1 Claim**



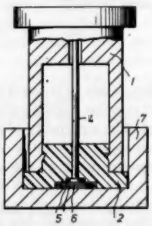
A rack and pinion gear steering assembly constructed and arranged so as to readily accommodate either manual or power steering within the same basic design configuration. The assembly comprises a steering shaft, a pinion gear, a rack tube which is extended longitudinally to provide a fluid power cylinder, a rack within the tube, a piston rod connected to the rack, a piston mounted on the rod and located within the power cylinder, fluid connections formed on the extended portion of the tube for openly communicating with the power cylinder on the opposite sides of the piston and a fluid servovalve connected between the steering shaft and the pinion gear to control the flow of pressurized fluid between a fluid pump and the opposite sides of the piston. The fluid connections may be formed on the tube by stud welding threaded conduit fittings to the tube and drilling bores through the fitting and tube.

3,800,408

METHOD OF FORMING A SOLDERING JIG FROM POLYIMIDE PLASTIC

Rigobert Schimmer; Horst Gesing, both of Belecke; Wolfgang Beerwerth, Neheim-Husten, and Jurgen Messerschmidt, Belecke, all of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt, Germany

Continuation-in-part of Ser. No. 62,994, Aug. 11, 1970, abandoned. This application June 29, 1971, Ser. No. 157,854
Claims priority, application Germany, Aug. 11, 1969, 1940769
Int. Cl. B23k *5/22, 31/02*
U.S. Cl. 29—493 **2 Claims**



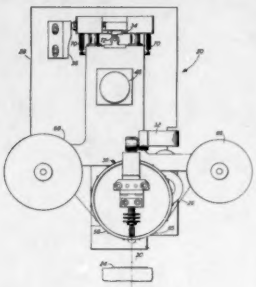
A method of soldering using a polyimide plastic jig where two parts to be joined are located in the jig and are soldered while in the jig.

3,800,409

METHOD FOR COMPLIANT BONDING

John Albert Boyer, Allentown; David Paul Ludwig, and Friedrich Zwickel, both of Whitehall, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 1, 1972, Ser. No. 249,332
Int. Cl. B23k 5/22, 31/02
U.S. Cl. 29—493 8 Claims



A compliant bonder has a single heated tip which is raised and lowered along a bonding axis. The tip is surrounded by a turret which indexes successive portions of a continuous compliant member across the bonding axis. The turret is provided with a series of holes through a rim portion thereof. In order to index the compliant member, after a bond is completed, the turret is lowered to disengage the bonding tip from the hole in the turret. The turret is then rotated to bring the next successive one of the holes onto the bonding axis. Next, the turret is raised to re-engage the tip with the newly positioned hole.

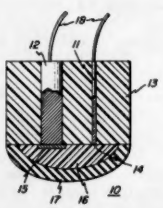
Just prior to and during bonding, the tip is forced to project out through one of the holes that is aligned with the bonding axis. A portion of the compliant member is stretched across the hole in the turret. Thus, the tip engages with the compliant member. The heated bonding tip is prevented from pre-heating the compliant member except immediately prior to and during a bonding operation. Thus, the desirable flow characteristics of the member are retained.

3,800,410

SENSOR AND METHOD OF MANUFACTURE

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 80,903, Oct. 15, 1970, Pat. No. 3,719,575. This application July 21, 1972, Ser. No. 273,845
Int. Cl. B01j 17/00
U.S. Cl. 29—570 4 Claims



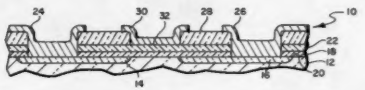
A sensor has a rigid electrically insulating matrix, at least a pair of generally parallel, elongated current collectors embedded in the matrix, the current collectors electrically insulated from each other and opposite ends exposed, an electrochemically active region in electrical contact with the exposed end of each current collector at one end of the matrix, an electrical lead in contact with each current collector at the opposite end of the matrix, an ion exchange resin electrolyte contacting both electrochemically active regions, and an outer sheath of diffusion barrier material encapsulating the electrochemically active regions and the electrolyte. Methods of manufacturing such sensors are also described.

3,800,411

METHOD OF FORMING A STABLE MNOS IGFET

Henry C. Abbink, Westlake Village, and Norman W. Goodwin, Encino, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 22, 1972, Ser. No. 255,281
Int. Cl. B01j 17/00
U.S. Cl. 29—571 15 Claims



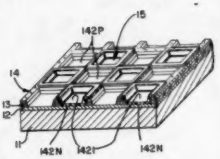
An MNOS IGFET device is formed by a process that eliminates or substantially minimizes contamination during formation and that results in a stabilized semiconductor device having a high field inversion threshold.

3,800,412

PROCESS FOR PRODUCING SURFACE-ORIENTED SEMICONDUCTING DEVICES

Ernst L. Wall, Woburn, and Walter K. Niblack, Bedford, both of Mass., assignors to Alpha Industries, Inc., Woburn, Mass.

Filed Apr. 5, 1972, Ser. No. 238,598
Int. Cl. B01j 17/00
U.S. Cl. 29—578 10 Claims



Surface-oriented diodes are produced by forming respective window areas for N+ and P+ doping in the surface of a semiconductive substrate, the first and second window areas being separated by a coating spacing pattern of uniform width. Diffusion of dopants into the N+ and P+ windows is carried out alternately for the respective window areas with the other window area masked. Similarly, the formation of ohmic contacts may be carried out alternately for the respective window areas, with the other window area masked. The process enables production of surface-oriented diodes on an economically feasible scale, while being tolerant of the realistic limits of photo-alignment precision and registration capabilities of the microcircuit art.

3,800,413

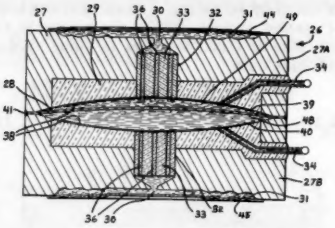
DIFFERENTIAL PRESSURE TRANSDUCER

Roger L. Frick, Minneapolis, Minn., assignor to Rosemount Inc., Minneapolis, Minn.

Division of Ser. No. 869,657, Oct. 27, 1969, Pat. No. 3,618,390. This application July 26, 1971, Ser. No. 164,861
Int. Cl. H04r 31/00; G01l 9/12
U.S. Cl. 29—592 4 Claims

A differential pressure transducer of the capacitor type utilizing isolation diaphragms for sensing the differential pres-

sure directly, and having a central chamber with a sensing diaphragm in the central chamber. The central chamber is filled with oil or a suitable liquid which transmits pressure from the isolation diaphragms to the sensing diaphragm. The sensing diaphragm forms a capacitor plate, and the walls of the chamber adjacent to the sensing diaphragm also form capacitor plates. The pressures are transmitted to the sensing diaphragm through the oil so that only differential pressure is



sensed between the two isolation diaphragms. The sensing diaphragm and its chamber are made so that any excessive pressure causes the sensing diaphragm to bottom out against its mounting chamber surfaces. The unit is made extremely stable, by using a relatively massive metal housing with a glass center portion fused thereto, and depositing the metallic capacitor plate material right onto the glass surfaces which form the sensing chamber.

3,800,414

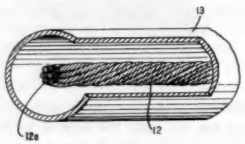
METHOD OF FABRICATING A HOLLOW COMPOSITE SUPERCONDUCTING STRUCTURE

Walter J. Shattes, Bloomfield; William G. Marancik, Basking Ridge, and Bradley S. Kirk, Warren, all of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Division of Ser. No. 36,741, May 13, 1970, Pat. No. 3,708,606. This application Oct. 12, 1972, Ser. No. 297,135

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **15 Claims**



A core element comprising superconducting strands in a normally conducting matrix is initially extruded in a desired cross-sectional shape or configuration; and is then interposed in a prefabricated or postfabricated tube, and coreduced to a final product of desired dimensions, thus providing a matrix having a plurality of longitudinal internal channels. The core elements may assume a variety of cross-sectional shapes, such as ribbon, square, cross, triangle, star, annulus, etc., or a composite of these. In an alternative process, a cable is formed by twisting or braiding together a plurality of superconducting matrix wires, prior to coreduction in a prefabricated or postfabricated tube. In another form, a superconducting matrix strip is welded to form a tube. In a variation of this, superconductor wires are interposed in longitudinal slots in a billet of normally conducting material which is rolled into a ribbon, alternatively formed into a tube. The product of any of these techniques is finally coreduced to a wire which is formed into a coil which may be cooled internally by a forced cooling system including fluid or superfluid helium.

3,800,415

METHOD OF PRODUCING AN ELECTRICAL HEATING ELEMENT AND FITTING ASSEMBLY

James F. Pease, 1001 Viewpoint Dr., Dayton, Ohio

Division of Ser. No. 244,516, April 17, 1972, Pat. No. 3,732,398, which is a continuation-in-part of Ser. No. 194,742, Nov. 1, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 334,002. The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 **9 Claims**

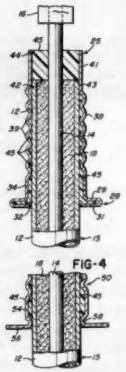


FIG-4

A heating element includes an elongated tubular sheath which confines a resistance wire supported by a thermally conductive electrical insulation material which extends to a position flush with the end surface of the sheath. Each end portion of the heating element is supported by a bulkhead fitting which is formed of sheet metal and includes a tubular wall portion having helical convolutions defining external threads. A radial flange portion projects outwardly from the tubular wall portion and forms an annular tapered hub portion firmly engaging the outer surface of the sheath. The flush end surfaces of the insulation material and the sheath are spaced inwardly from the end surface of the fitting to define a cavity, and a thermosetting sealant material is disposed within this cavity and the space defined between the outer surface of the sheath and the helical convolutions.

3,800,416

METHOD AND APPARATUS FOR ASSEMBLY OF CONTACTS IN A PRINTED CIRCUIT BOARD

Edmund Franklin Shultz, Jr., and Ronald Eugene Katzaman, both of Hummelstown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

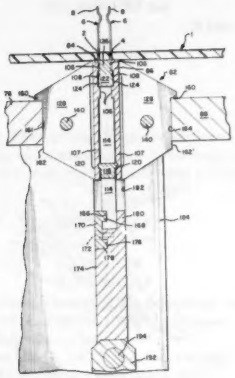
Filed May 19, 1972, Ser. No. 255,239

Int. Cl. H05k *13/04*

U.S. Cl. 29—625 **6 Claims**

The present invention relates to a method and apparatus for simultaneously assembling a plurality of elongated contacts within corresponding apertures provided in a printed circuit board. According to the assembly techniques of the present invention, an entire row of elongated contacts are initially manually inserted into corresponding rows of P.C. board apertures with the aid of a hand tool. In the present invention, the printed circuit board is mounted on a carriage of an insertion machine. The initially inserted row of contacts partially protrudes through the P.C. board and is received in the jaws of a vise. In the operation of the insertion machine, the vise jaws close and grip the row of protruding contacts. Sequentially, a limited and precisely adjusted relative motion is effected

between the P.C. board carriage and the vise. Such operation causes a corresponding limited and precisely controlled relative displacement between the inserted row of contacts and the P.C. board, thus forcibly positioning and seating the enlarged, interference fit portions of the contacts within corresponding apertures of the P.C. board. In this manner, all contacts of the row are precisely positioned simultaneously in desired registration within the printed circuit board. Sequentially, the vise jaws are opened, allowing an operator of the machine to remove the contacts therefrom and reposition the P.C. board on the carriage for insertion of another row of contacts. With the board thus repositioned, the machine may be reset for a repeated cycle of operation. In a modification of the machine, a mechanism is provided which is actuated after opening of the jaws, thereby automatically removing the row of contacts from the jaws. The purpose of this operation is to provide a substantial clearance between the P.C. board and the jaws, allowing the operator to reposition the P.C. board on the carriage without interfering with the vise jaws. With the P.C. board repositioned (desirably for insertion of another row of contacts) the operator may then reset the machine for a repeated cycle of operation.



3,800,417

CUTTER FOR A DRY-SHAVER DRIVEN BY A MOTOR

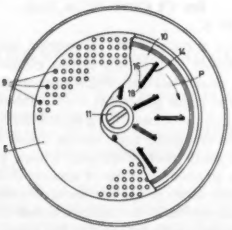
Eduard Willem Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,914

Claims priority, application Netherlands, June 21, 1971, 7108535

Int. Cl. B26b *19/14*

U.S. Cl. 30—43.6 **4 Claims**



The invention relates to a cutter for a dry-shaver which is driven by motor, has a shear plate, in particular a flexible shear foil, provided with hair entry openings, and a cutter support which is adapted to be driven into rotation by a motor and carries at least one cutter, the cutting edge of the or each cutter cooperating with the shear plate, while the or each cutter is slightly tiltable with respect to the shear plate, the or each cutting edge being substantially straight and extending in a direction substantially at right angles to the direction of its movement with respect to the shear plate, whilst the cutters have, adjacent to the ends of their cutting edges, at least in as far as these ends cooperate with a shear plate part provided with hair entry openings, anti-damage portions which each have a curved outline with merges into the relevant cutting edge.

3,800,418

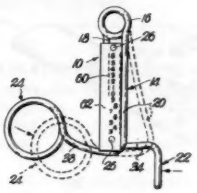
WIRE STRIPPER

Donald K. Schlueter, Box 40, Farley, Mo.

Filed July 10, 1972, Ser. No. 270,092

Int. Cl. B26b *27/00*

U.S. Cl. 30—91.2 **4 Claims**



A cutter blade is mounted in a cutter block such that the cutting edge of the blade intersects a series of transverse grooves in the block, the grooves being of various depths and widths to accommodate electrical wiring covered with insulation of differing thicknesses. A spring loaded arm maintains pressure on the wiring as the block is rotated around the conductor of the wiring to form an annular cut in the insulation of the wiring. The cut around the conductor ceases when the wiring bottoms out in the selected groove before the cutting edge can engage the conductor. The pressure arm is a part of a single length of rod material which also includes a coil to spring load the arm and a pair of hand grips to control the arm, one of the grips serving as a finger-receiving ring used to rotate the block.

3,800,419

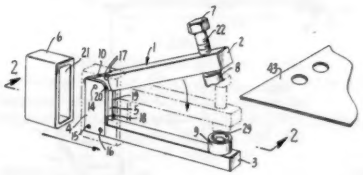
METAL PUNCH

Carter S. Hughes, Jr., P.O. Box 743, Fallon, Nev.

Filed Dec. 22, 1972, Ser. No. 317,527

Int. Cl. B26p *1/40*

U.S. Cl. 30—358 **7 Claims**



A metal punch for use by an electrician to punch holes in boxes, panels and cabinets comprising a pair of spaced, coplanar, elongated rectangular jaw bars interconnected at one of their ends such that they may be pivoted from a parallel

position to positions in which their free ends diverge; a screw received through a threaded bore running perpendicularly through the free end of one of the jaw bars; a conventional, presently available punch element mounted on the end of the shank of the screw such that it moves axially with the shank without rotation; a die attached to the end of the other jaw bar with its bore facing and aligned with the punch element when the jaw bars are substantially parallel; and a collar which slides over the jaw bars and restrains them in a substantially parallel position and keeps them from twisting when the punch is operated.

3,800,420

ORTHODONTIC DILATOR

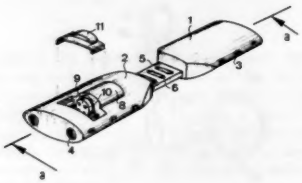
Gilbert Ouaknine, 6 rue Mazzini, Narbonne (Aude), France

Filed Sept. 29, 1972, Ser. No. 293,463

Claims priority, application France, Oct. 5, 1971, 71.35824

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 E **8 Claims**



The dilating device consists of an element made of two mobile parts facing each other, each part being adapted to be embedded in a block of resin shaped to the area of the palate; one part includes a driving worm with an actuating head and a threaded element located in a housing provided in the said part; the other mobile part includes a rack received in a suitably shaped cavity in the first mobile part, the cavity communicating with the housing of the driving worm; the threads of the driving worm engage with the teeth of the rack whereby rotation of the worm causes the rack to slide in the cavity and produces relative movement between the two parts either towards or away from each other.

3,800,421

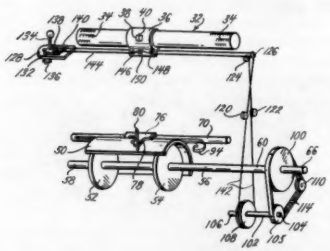
DIE LAYOUT APPARATUS

Louis E. Sauer, and Orville C. Miller, both of St. Louis, Mo., assignors to Centenary Central Inc., St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,229

Int. Cl. B43l *13/10*

U.S. Cl. 33—22 **8 Claims**



An apparatus for laying out a pattern upon a rotary die board. The apparatus includes a measuring member bearing a plurality of scales differing corresponding respectively to different predetermined degrees of foreshortening. An indicator traverses the measuring member in response to axial rotation of the arcuate die board.

3,800,422

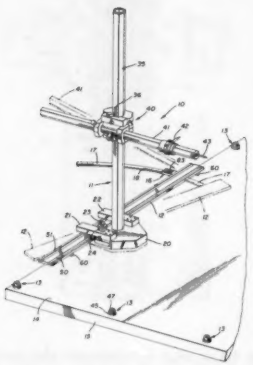
LAYOUT APPARATUS HAVING IMPROVED ANGULAR ADJUSTMENT MEANS

Frederick S. Schiler, Stow, Ohio assignor to The Bendix Corporation

Filed June 16, 1972, Ser. No. 263,659

Int. Cl. G01b *5/00*

U.S. Cl. 33—169 R **9 Claims**



Layout apparatus having a base, an upright column, a bracket slidable on the column, and a crossarm slidable relatively of the bracket is improved by utilizing a guide rail assembly that can be selectively secured to at least one or more locating stations, with the guide rail assembly including an arm support member within which may be received an arcuate guide to thus permit the rail to be pivoted around one locating station to the desired degree of angularity required.

3,800,423

METHOD AND APPARATUS FOR MEASURING PITCH OR INDEXING ERRORS IN TOOTHED MEMBERS

Robert G. Munro, Huddersfield, and Rodney B. Hale, Watford, both of England, assignors to J. Goulder & Sons Limited, Huddersfield, England

Continuation-in-part of Ser. No. 118,133, Feb. 23, 1971, abandoned. This application Oct. 26, 1972, Ser. No. 301,064

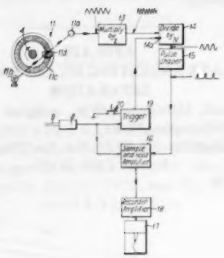
Claims priority, application Great Britain, Feb. 26, 1970, 9330/70

Int. Cl. G01b *19/26, 5/20*

U.S. Cl. 33—179.5 **8 Claims**

The described apparatus for measuring pitch errors in a gear wheel consists of a motor-driven continuously-rotable support for the gear wheel, to which support is coupled a circular grating type pulse generator whose electrical pulse output is electronically processed by a multiplier and a divider to produce a reference pulse train whose count is directly proportional to the tooth pitch of the gear wheel. These pulses are then shaped to produce a train of clearly defined reference signals. A reciprocatory probe carrier is provided for inserting a probe successively into the spaces between adjacent gear teeth synchromously with rotation of the gear. A sample-and-hold amplifier passes a probe deflection signal to a recorder on each occurrence of a reference signal. A trigger device connected to the probe output is used during the initial probe deflection to make the first reference pulse coincide with the

arbitary value of probe deflection signal selected conveniently on approximately 50 percent of the maximum value of probe

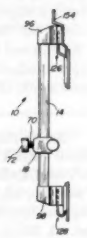


deflection signal. Thereafter, the probe deflection signals are measured on the occurence of each subsequent reference signal and deviation from the selected value is recorded.

3,800,424
BOW SIGHT

Charles A. Saunders; Thomas Allen Saunders, and Eugene F. Saunders, all of Columbus, Nebr., assignors to Saunders Archery Co., Columbus, Nebr.

Filed May 8, 1972, Ser. No. 250,969
Int. Cl. F41g 1/46; F41b 5/00
U.S. Cl. 33—265 **5 Claims**



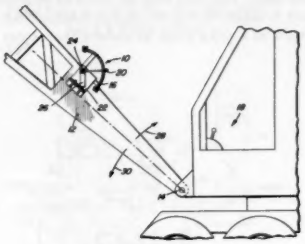
A bow sight having improved locking means for securing a vertically shiftable slide block in selectable positions along a bar, the bar being provided with at least two surfaces on which range indicia and data may be recorded.

3,800,425
BOOM ORIENTATION AND LOAD CAPACITY INDICATOR

Jack J. Haynie, Charlotte, N.C., assignor to J.A. Jones Construction Company, Charlotte, N.C.

Filed Mar. 20, 1972, Ser. No. 235,985
Int. Cl. G01c 9/12
U.S. Cl. 33—333 **3 Claims**

An indicating device for crane booms or the like, said device comprising a framework adapted to be fastened to a boom, a curved scale member connected to the framework with angular orientation, working radius and load capacity indicia thereon, and an indicator with a pointer thereon for coacting with the indicia to provide appropriate readings to the crane operator, the indicator being provided with a pendulum or weighted member to maintain it in the same angular orientation independent of the boom angle, such that when

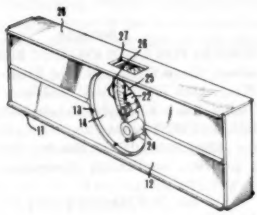


the boom position is changed, the curved scale member rotates with respect to the pointer, thereby providing clearly visible readings to the operator.

3,800,426
INCLINATION MEASURING APPARATUS

Masazo Nakamura, No. 50, Daihojichohigashirocho, Minami-ku, Osaka-fu, Japan

Filed July 2, 1971, Ser. No. 159,337
Claims priority, application Japan, Sept. 22, 1970, 45-94775
Int. Cl. G01c 9/12
U.S. Cl. 33—368 **1 Claim**



An inclination measuring apparatus includes a casing with a flat underside to be brought into contact with a surface to be measured. A base member is rotatably positioned within the casing and has a spindle penetrating the center thereof. On the upper and lower ends of the base member are respectively provided an indicator and a weight. A graduation plate is provided on one end of the spindle, and a window is provided on the casing so that the point on the graduation plate at which the indicator stops may be read.

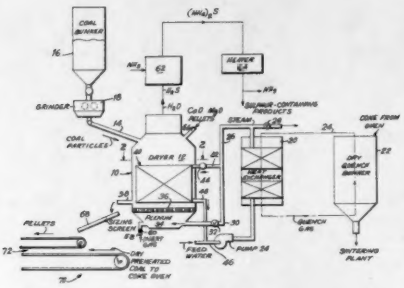
3,800,427
METHOD FOR DRYING COAL

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 283,155, Aug. 23, 1972. This application Jan. 18, 1973, Ser. No. 324,740
Int. Cl. F26b 3/08
U.S. Cl. 34—10 **4 Claims**

A method for drying coal. The coal, in the form of coal particles, is fed into a drying chamber where the coal is suspended in a fluidized bed while being dried in an atmosphere of steam which is at a temperature too low to release oxygen but high enough to extract sulphur from the coal particles. The temperature of the atmosphere in the fluidized bed where the dry-

ing of the coal takes place is regulated with heating coils which directly contact the coal particles while the latter are suspended in the fluidized bed, so that further drying is achieved by direct contact between the coal particles and the heating coils. The coal with its reduced sulphur and moisture content is taken in a preheated condition from the dryer and delivered to a coke oven to reduce the extent to which coal



must be heated therein. Gas extracted from the dryer is treated to have water condensed therefrom and to extract sulphur therefrom. In addition, pellets of calcium oxide and/or magnesium oxide are delivered to the fluidized bed together with the coal particles for further extracting sulphur from the atmosphere in the fluidized bed, these pellets also being subsequently treated, as by roasting, to extract sulphur therefrom.

3,800,428

PROCESS FOR COOLING HOT BRIQUETTES

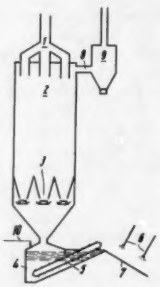
Erwin Ahland, Essen-Stadtwald, and Ernst-Albert Ratajczak, Essen-Kray, both of Germany, assignors to Bergwerksverband GmbH, Essen-Kray and Metallgesellschaft AG, Frankfurt/Main, both of, Germany

Filed June 6, 1972, Ser. No. 260,140

Claims priority, application Germany, June 18, 1971, 2130066

Int. Cl. F26b *7/00*; **C10l** *5/02*

U.S. Cl. 34—20 **2 Claims**



Hot briquettes made from carbonaceous materials are cooled in at least two stages using water vapor as the coolant in the first stage and boiling water as the coolant in the subsequent stage. Water vapor for the first stage is generated by immersing the briquettes leaving the first stage in a water bath whereby the resulting water vapor rises into the first cooling stage.

Apparatus for carrying out the process includes shaft cooler means having continuously operating discharge means, water bath means containing conveyor means and chute means adjacent the conveyor means having spray cooling means associated therewith.

3,800,429

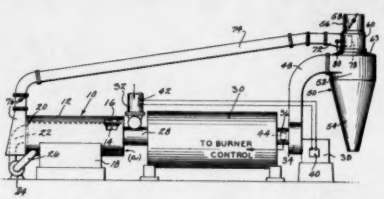
PARTICULATE ARRESTING MEANS FOR CYCLONIC SEPARATOR

Gordon J. Lindl, Milwaukee, Wis., assignor to Arnold Dryer Company, Milwaukee, Wis.

Filed Oct. 10, 1972, Ser. No. 296,429

Int. Cl. F26b *21/06*

U.S. Cl. 34—79 **1 Claim**



A gas stream containing suspended particulate material is blown tangentially into the body of a cyclonic separator and swirls around the body in a cyclonic path. An exhaust conduit at the upper end is surrounded by a larger sleeve to provide an annular space around the exhaust conduit which is large enough to admit a swirling ring of a gas containing suspended particulate material. An opening is formed in the sleeve for tangentially skimming gas and particulate material from the annular space and a damper is adjustably mounted adjacent to the opening for controlling the flow of gas and particulate material therethrough. When used to recycle exhaust gases to a dryer furnace the damper is adjusted to return an amount of air which meets the requirements of the dryer.

3,800,430

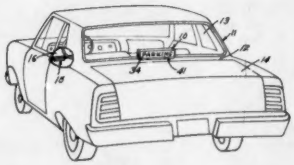
MULTIPLE PURPOSE VEHICLE SIGNAL DEVICE

Herb G. Samra, 1606 N. 74th Ct., Elmwood Park, Ill.

Continuation-in-part of Ser. No. 43,370, June 4, 1970, Pat. No. 3,656,104. This application Jan. 3, 1972, Ser. No. 214,890

Int. Cl. B60q *1/32*

U.S. Cl. 340—95 R **8 Claims**



A visual signal device for vehicles adapted to be selectively mounted inside or outside the vehicle and controlled from the driver's seat to beam an otherwise inconspicuous interchangeable signal indicia providing an advance warning to traffic or pedestrians in a flashing, conspicuous manner. The device has an opening receiving one or more window panels which when illuminated by illuminating means in the device will beam a desired message. The device also has a storage compartment for storing additional window panels and mounting means coacting with bracket means that will accommodate adjust-

ments, for example, such as vertical, horizontal and tilting adjustments of the device. A panel adjacent to the driver's seat contains a switch, a fuse, an indicator such as a light or buzzer and flasher means to control the illuminating means in the device.

3,800,431

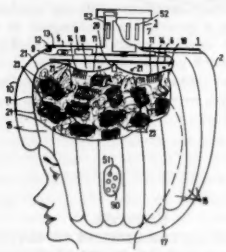
PORTABLE HAIR DRYER HOOD

Otto Hubner, 199 Mauerkircherstrabe, 8 Munich 81, Germany

Continuation-in-part of Ser. No. 231,503, March 3, 1972. This application July 27, 1972, Ser. No. 275,786

Int. Cl. F26b *20/24*

U.S. Cl. 34—99 **8 Claims**



A portable hair dryer hood which includes inner and outer jackets divided into longitudinal cells which support at their apex a housing containing a motor operated blower whose weight is reduced by the upward force of the air cushion formed by the air from the blower.

3,800,432

PHOTO-SENSITIVE SHEET DRYING APPARATUS

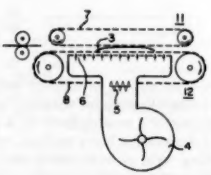
Tomiaki Miyata; Shinji Hamada; Shigenobu Watanabe, and Toshiko Ogawa, all of Kanagawa-ken, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Ashigarakami-gun, Kanagawa-ken, Japan

Filed Aug. 16, 1971, Ser. No. 172,100

Claims priority, application Japan, Aug. 20, 1970, 45-72923

Int. Cl. F26b *13/10*

U.S. Cl. 34—151 **8 Claims**



An improvement of a photo-sensitive sheet drying apparatus having upper and lower conveyor belts arranged lengthwise in the parallel relationship. The apparatus has means to drive these conveyor belts at equi-speed in one direction, thus assuring the smooth transportation of photo-sensitive sheets in the course of the drying operation without the curled end of the wet sheet catching when dried.

3,800,433

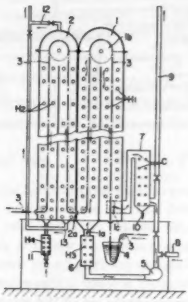
DRYING AND CURING APPARATUS

Hisayoshi Kubodera, 19-10, 2-chome, Shinbashi, Minato-ku, Tokyo-To, Japan

Filed May 4, 1972, Ser. No. 250,350

Int. Cl. F26b *13/06*

U.S. Cl. 34—155 **2 Claims**



An apparatus for drying and curing a plastic resin dissolved in a solvent and applied on an elongated sheet material such as paper or fabric essentially comprises two vertical, inverted U-shaped heating chambers through which the elongated sheet material is advanced, the first heating chamber being provided with an air circulating path and a solvent recovering chamber, while the second heating chamber is provided with means for supplying fresh air of a far smaller amount than that of the air circulated in the first heating chamber, and means for exhausting air, while the temperature in the second heating chamber is kept considerably higher than that of the first heating chamber.

3,800,434

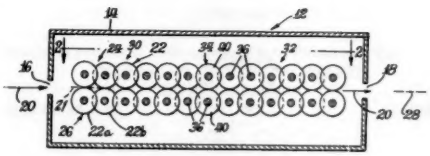
GRAPHIC ARTS FILM DRYER

Donald C. Edgington, and William E. Edgington, both of 2425 N. Ashland Ave., Chicago, Ill.

Filed Oct. 30, 1972, Ser. No. 301,792

Int. Cl. F26b *13/02*

U.S. Cl. 34—155 **5 Claims**



A cabinet having an inlet opening and an outlet opening, and a series of pairs of rolls gripping the film in an intermediate plane and carrying it through. Each roll is made up of a plurality of axially spaced sections, the sections of the rolls of each pair being transaxially aligned and inter-engaging or mutually gripping. The roll sections of successive pairs are relatively offset or staggered, with the respective rolls overlapping or interfitted. The rolls include two groups of main rolls of the above kind, each group including a plurality of pairs, and the rolls in the two groups are relatively offset axially. Also included is a pair of changeover or transfer rolls, each made up of a plurality of sections of lesser axial extent than the sections of the main rolls, and interfitted with the adjacent rolls of the two groups of main rolls.

3,800,435

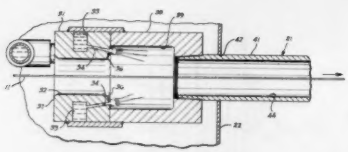
APPARATUS FOR TREATING ELONGATED MATERIAL

Horst Louis Woellner, Lower East Hill Rd., Colden, N.Y.

Division of Ser. No. 101,713, Dec. 28, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 337,820

Int. Cl. F26b *13/28*; C21d *9/52*

U.S. Cl. 34—155 9 Claims



Successive sections of a strand material are advanced along a predetermined path into an entrance end of, through, and then out of a laterally closed chamber. The entrance end of the chamber is in communication with the air of the ambient atmosphere. High velocity jet streams of treating material are directed into the chamber toward oblique converging engagement with the successive sections of the strand material. Substantial components of the velocities of the jet streams are in the direction of travel of the strand material. The minimum cross-sectional area of the passages of the chamber through which the streams are directed and the strand material travels are substantially greater than that of the strand material. The velocity of the jet streams and the geometrical relationship of passages of the chamber through which the strand material and the jet streams pass and the pressure of the air are such as to create pressure differentials sufficient to cause air to be drawn into the entrance of the chamber at a volumetric flow which is substantially greater than that of the treating material. The air is mixed with the treating material to produce a vapor mixture which moves through the chamber along the path of the strand material to treat the strand material.

3,800,436

EDUCATIONAL SEWING DOLL

Johanna Matzek, 9707 Benham Ave., Cleveland, Ohio

Filed Mar. 8, 1973, Ser. No. 339,406

Int. Cl. G09b *19/20*

U.S. Cl. 35—8 R 8 Claims

A doll for assembly by a child-student for teaching sewing techniques, developing creativity, and providing a play toy after assembly. The doll includes arms and legs, which are easily sewn to rigid fastening elements connected to the main body of the doll, and a face portion and hair, which are sewn to the head portion by the child-student.

3,800,437

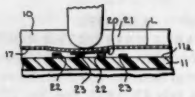
EDUCATIONAL APPARATUS

Jack L. Lamberson, P.O. Box 482, Foxboro, Mass.

Filed Dec. 1, 1972, Ser. No. 311,347

Int. Cl. G09b *7/06*

U.S. Cl. 35—9 B 8 Claims



Various educational apparatus utilizing teaching sheets or film for providing a positive reward signal in response to depression of the correct symbol or a teaching sheet or depression of a switch corresponding to the correct, projection symbol. In one embodiment of this invention, a musical educational device is provided to produce tones corresponding to musical symbols on a teaching sheet.

3,800,438

APPARATUS FOR TREATMENT OF MATERIALS, PARTICULARLY THE HEAT TREATMENT OF WEBS

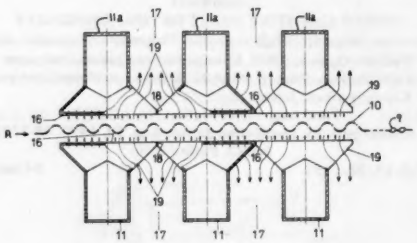
Christian August Meier-Windhorst, Heidenkampsweg, Germany, assignor to Artos-Gesellschaft fur Industrielle Forschung und Entwicklung C.A. Meier-Windhorst, Winsen (Luhe), Germany

Filed Nov. 15, 1971, Ser. No. 198,927

Claims priority, application Germany, Nov. 19, 1970, 2056889

Int. Cl. F26b *13/00*

U.S. Cl. 34—156 5 Claims



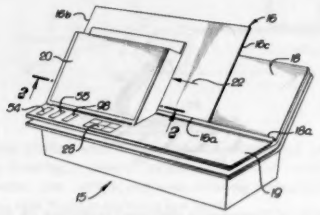
Apparatus for the heat treatment of webs of materials, particularly textiles, and especially tension-sensitive textiles, e.g., knitwear, which comprises the arrangement of a plurality of nozzle bodies forming together a large surface, either below the path of the travelling web, or both below and above that path, each body having outlet openings for the admission of a treatment medium to impinging the web, said apparatus further comprising narrow ducts for the discharge of the treatment medium, all ducts emptying into a larger collecting duct, arranged laterally so as not to interfere with the web on its way out of the apparatus. The advantage of the apparatus according to the invention is that it provides flutter free and substantially pressure-and tension-free movement of loosely guided webs, which are exposed to the current of a gaseous medium.

3,800,439

TEST SCORING APPARATUS

Michael Sokolski, Newport Beach, Calif., and Thomas J. Poole, Norwood, Mass., assignors to Scan-Tron Corporation, Los Angeles, Calif.

Filed May 4, 1972, Ser. No. 250,313
Int. Cl. G09b 7/10
U.S. Cl. 35—48 B 25 Claims



Apparatus is disclosed for scoring a test sheet having a control mark column containing (a) a start of test mark, (b) a plurality of answer control marks, and (c) an end of page mark and having answer receiving spaces associated with the answer control marks in either a "vertical" or "horizontal" format. The apparatus includes a control column sensor and circuitry distinguishing the (a), (b), and (c) control marks. Detection of a start of test mark enables mode selection circuitry to condition the apparatus in accordance with mode indicating marks on the sheet. For example detection of a "master" mark conditions the apparatus to enter answers from a master sheet into a correct answer memory. The absence of a master mark places the apparatus in the scoring mode.

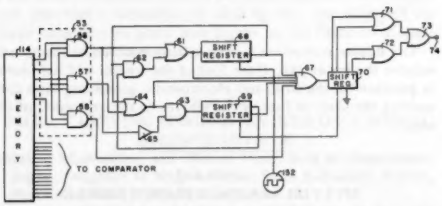
As each answer control mark is detected, answers from the answer spaces row aligned with that mark are entered into a storage register, then compared serially with data from the correct answer memory. Detection of an incorrect answer to a valid question causes an error mark to be printed on the test sheet; a correct answer increments a score counter. Detection of the end of page mark causes score printout. Provision is made for calculating the average score of many test sheets, and for rescoring individual tests with the same or a different set of stored correct answers.

3,800,440

RADIO IDENTIFICATION SYSTEM SIMULATOR (IFF)

Robert J. Membrino, Silver Spring, and Edward F. Magee, Crofton, both of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,668
Int. Cl. G06g 7/78; G09b 9/00
U.S. Cl. 35—10.4 6 Claims



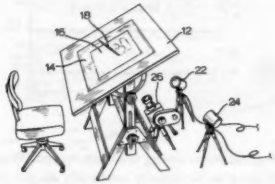
Radar equipment very often includes a separate code querying signal which is used to identify a target vehicle as friend or foe. When the code radio signal impinges upon a friendly target vehicle, it triggers a "transponder" which generates and transmits a corresponding code signal. The signal generated by the target vehicle is received by the radar antenna and is displayed on the radar screen adjacent the return image of the target itself. The simulator of this disclosure is an adjunct to digital radar simulators. Information representing the condition of the simulated target vehicle is stored in a memory, and that information is decoded to drive two shift registers to generate any of three possible IFF display signals. The decoded pulse is applied to the inputs of a pair of shift registers which are stepped by the output of a clock. The outputs from the shift registers are circulated, when appropriate, to generate multiple display signals. The result is one, two, or four bars displayed on the radar screen.

3,800,441

METHOD FOR ILLUSTRATING

Duncan I. Macpherson, 181 Blythwood Rd., Toronto, Ontario, Canada

Filed Aug. 7, 1972, Ser. No. 278,636
Int. Cl. G09b 19/00
U.S. Cl. 35—26 13 Claims



This invention relates to a method for illustrating wherein the illustration is made on one side of a screen, the drawing ink penetrates the screen and one can view the drawing as it is being made from the other side of the screen without the artist or his drawing implements being visible, and also to a screen for drawing in this fashion.

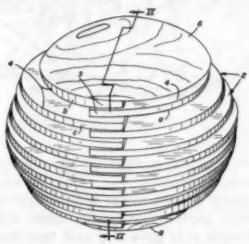
With this invention the illustration is done on a specially selected and treated fabric so that the artist's ink penetrates between the threads of the fabric by capillary action and does not feather or spread laterally of the fabric. The fabric is a non-absorbent one such as a polyester, and it is treated with a fixative at the thread intersections to prevent ink from running along the threads in a lateral direction.

3,800,442

SCULPTURE DEVICE

Marcello Petrocelli, 1406 Idlewood Rd., Pittsburgh, Pa.

Filed Feb. 29, 1972, Ser. No. 230,227
Int. Cl. A63h 33/00
U.S. Cl. 35—28 2 Claims



A compact sculpture device which is changeable and extendible to provide a myriad of various shapes and geometric

designs. The device is easily assembled and comprises plate members that are pivotally connected in a configuration that permits independent articulation of adjacent plates and the ready changing from one configuration for the device to another.

3,800,443

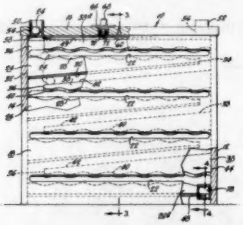
READING ACCELERATOR

Gertrude S. O'Connell, and William H. O'Connell, both of Lakeview Dr., RFD 1, North Salem, N.Y.

Filed May 4, 1973, Ser. No. 357,255

Int. Cl. G09b *17/00*

U.S. Cl. 35—35 H **11 Claims**



A teaching aid for training students to read from left to right which includes a substantially vertically disposed panel which presents to the view of the student a parallel array of horizontal slots. A captive ball within the slot is advanced by the student's finger from the left-hand end of the uppermost slot toward the right. On reaching the right-hand end of each slot, the ball descends along a hidden ramp to the left-hand end of the succeeding slot. Means are preferably provided to impede the rolling of the ball along the slot so that the student's finger must traverse substantially the length of each slot, always moving to the right. Indicia such as words or letters may be provided on the panel along each slot so that the student's eyes will become acclimated to the correct direction of eye travel when reading individual words and lines of words.

3,800,444

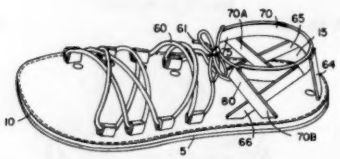
SANDAL CONSTRUCTION

Clifford Kenneth Young, P.O. Box 787, Kings Beach, Calif.

Continuation-in-part of Ser. No. 148,570, June 1, 1971, abandoned. This application Dec. 5, 1972, Ser. No. 312,427

Int. Cl. A43b *3/12*

U.S. Cl. 36—11.5 **4 Claims**



An improved sandal comprising in combination an upper and lower sole, a series of guys evenly distributed about the frontal periphery of said upper sole, a heel basket disposed about the rear periphery of said upper sole, and a lace threaded through said guys and said heel basket to form a basket-like interstitial webbing which not only allows the foot of the wearer maximum lateral and longitudinal binding stability by a single adjustment of a bow knot, but also allows the foot maximum freedom of function during walking or running.

3,800,445

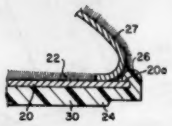
METHOD AND APPARATUS FOR MAKING SCUFF SLIPPERS AND THE LIKE

David Greenblatt, 135 Redwood Dr., Roslyn, N.Y., and Allan Greenblatt, 5 Hickory Dr., Great Neck, N.Y.

Filed June 1, 1971, Ser. No. 148,652

Int. Cl. A43c *13/08*

U.S. Cl. 36—14 **3 Claims**



An article of footwear is disclosed including an upper assembly having a midsole member with a laterally protruding peripheral ledge portion. The article is provided with a unitary outersole having an integral upwardly extending peripheral side wall portion overlying the outer periphery of the ledge and having at its outer end a peripheral inwardly projecting bead substantially surrounding the ledge on three sides. An injection molding method and apparatus for making the article are further disclosed. The apparatus includes a mold plate and preferably a pair of laterally movable rings each having an inwardly directed peripheral lip piece overhanging and engageable with the upper lateral surface of the ledge.

3,800,446

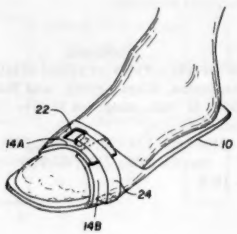
DISPOSABLE FOOTWEAR WITH GROUNDING MEANS

Jan Pass, Thornhill, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 20, 1973, Ser. No. 333,751

Int. Cl. A43b *3/16;* **H05f** *3/00*

U.S. Cl. 36—7.1 R **1 Claim**



The device comprises a sole, a strap secured to the sole to receive the lower part of the foot of the wearer and hold same in position on the sole, and electrostatic grounding tape connecting the shoe or foot of the wearer to the underside of the sole.

3,800,447

MULTIBLADE SNOWPLOW VEHICLE

Edgar D. Harvey, 25 Glenwood St., Springfield, Mass.

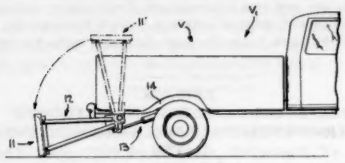
Filed Nov. 9, 1971, Ser. No. 197,015

Int. Cl. E01h *5/00*

U.S. Cl. 37—41 **1 Claim**

A method of clearing loose material such as snow is provided employing a snowplow vehicle whereon is attached a front mounted plow blade, a rear mounted plow blade, con-

trolling means for said blades, activating means for said blades, a movable support frame means affixing said rear blade to said activating means. The material clearing method



comprises pulling said loose material away from an obstacle thereby forming a mound, repositioning said vehicle behind said mound and completing said clearing operation by pushing,using said front mounted plow blade.

3,800,448

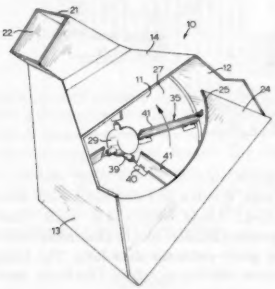
ROTARY SNOW THROWER

Clare A. Preston, R.R. No. 3, Newmarket, Ontario, Canada

Filed May 29, 1973, Ser. No. 364,349

Int. Cl. E01h *5/00*

U.S. Cl. 37—43 A **3 Claims**



The specification discloses an improved rotary snow thrower. The thrower includes a saucer-shaped rotary member having a plurality of blade assemblies on its surface. Snow on the road surface is collected by a mould-board and is delivered to the saucer-shaped rotary member solely by gravity, so that the rotary member provides a constant centrifugal force for throwing the snow away from the thrower. The blade assembly is deflectable when it encounters the free-falling snow from the mould-board to the rotary member. The deflection provides a vibration for shaking any wet snow off the blade such that no snow may freeze on the blade to hamper the operation of the snow thrower.

3,800,449

MARK CARRYING MEMBER AFFIXED ON A ROUGH SURFACE ARTICLE

Shinichi Minatodani, and Hisashi Oishi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Jan. 11, 1971, Ser. No. 105,281

Claims priority, application Japan, Jan. 9, 1970, 45-3571; Jan. 10, 1970, 45-3134

Int. Cl. G09f *3/02*; **B32b** *25/20*

U.S. Cl. 40—2 R **5 Claims**

A mark carrying plate of metal or plastic material is bonded on the rough surface of an article such as a piano frame of cast metal, with an elastic substance interposed between the plate and the article. The mark carrying plate may be provided with a recess which receives the elastic substance so as to conceal

the elastic substance therein. Interposition of the elastic substance between the plate and the article enhances the bonding strength therebetween and serves to absorb shock vibrations transmitted from the article to the plate.

3,800,450

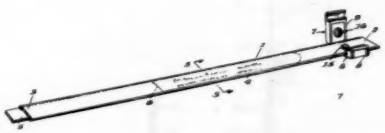
IDENTIFICATION BAND

Lorene Laugherty, and James R. Laugherty, both of Knoxville, Tenn., assignors to Laugherty Incorporated, Knoxville, Tenn.

Filed Mar. 31, 1972, Ser. No. 240,139

Int. Cl. G09f *3/12*

U.S. Cl. 40—21 C **5 Claims**



An identification band to be secured to the arm or other limb of a wearer and intended to have the name or other appropriate identification of the person to which the band may be applied. The band comprises an elongated tube of nonelastic material which is preferably transparent, to allow an identification card to be inserted in the tube and to be visible through the wall thereof, bearing the name or other identification of the person. One end of the band has a clip applied thereto while the opposite end is adapted to be folded over the first-mentioned end and to be secured together by the clip. The clip is intended to be permanently closed when the band is applied to an individual and to maintain the effective overlapped relation of the ends of the tube.

3,800,451

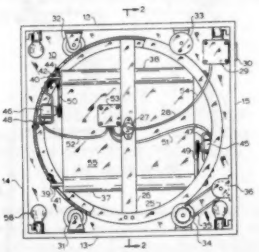
MOVING ARTISTIC DISPLAY DEVICE

Dewey Bulkley, 1176 N. 75 East, Orem, Utah

Filed Oct. 14, 1971, Ser. No. 189,301

Int. Cl. G09f *11/04*

U.S. Cl. 40—34 **3 Claims**



A moving artistic display device comprising a box-like structure having in its front wall a circular viewing window

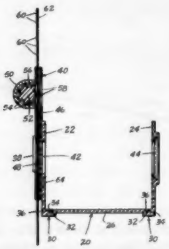
covered by a transparent doubly-fluted glass through which is viewed a lighted, multi-colored design arranged to be rotated in a plane parallel to that of the glass. In one embodiment the design is formed on a disk mounted behind the glass on a circular, motor-driven platform, while in another embodiment the design appears on an elongated, web-like strip which is adapted to be fed back and forth between rollers mounted on the rotating platform, thus varying the pattern of the rotating design as viewed through the fluted glass window. In operation, the simulated lenticular lenses present in a glass of this character pick up and exaggerate the color patterns of the rotating design and thus provide an ever-changing, eye-catching display.

3,800,452

MAILING VIEWER FOR SLIDES AND THE LIKE

Paul G. Kiehl, St. Louis, Mo., assignor to Visual Data Corporation, Chesterfield, Mo.

Continuation of Ser. No. 57,179, July 22, 1970, abandoned.
This application Nov. 16, 1972, Ser. No. 307,107
Int. Cl. G02g *27/22*; **G09f** *11/30*
U.S. Cl. 40—63 A **6 Claims**



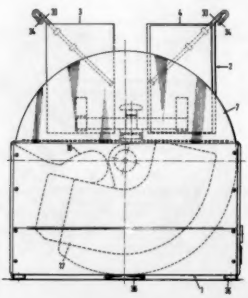
The disclosed structure is a collapsible integral three-panel flat mailing slide viewer including a removable adapter for viewing film strips. The viewer may be formed for 2-D or 3-D slides.

3,800,453

PAGE TURNING DEVICE

Willem Jacobus Kroes, Lunteren, Netherlands, assignor to Stichting Revalidatie Research, Schiedam, Netherlands

Filed July 3, 1972, Ser. No. 268,584
Claims priority, application Netherlands, Apr. 27, 1972, 7205714
Int. Cl. G09f *11/00*
U.S. Cl. 40—104 A **4 Claims**



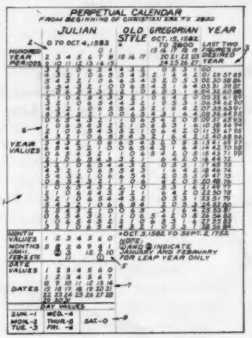
A page turning device for mechanically turning the pages of a book comprising holding means for holding the book, a suction mouth for lifting the page, which suction mouth is so positioned that the plane of its open end encloses an acute angle with the part of the page remote from the hinge line of the book so as to effect a better separation of the lifted page and the subjacent one and a transparant disc having a cutout, the trailing boundary edge of which is rotated between the lifted page and the book, takes the page along and turns it completely.

3,800,454

PERPETUAL CALENDAR AND METHOD OF DETERMINING DAYS OF WEEK FROM CALENDAR DATES

Philip E. Anderson, 245 Russell Ave. South, Minneapolis, Minn.

Filed Apr. 12, 1972, Ser. No. 243,156
Int. Cl. G09d *3/10*
U.S. Cl. 40—109 **2 Claims**



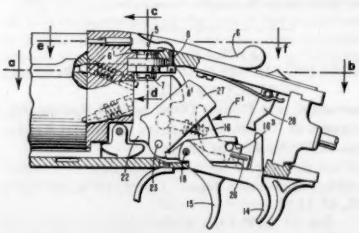
Tables of years, months of the year, and day dates of a month, the years, months and day dates each having a given numerical value. These values are such that a simple arithmetical process enables one to determine on which day of the week any given calendar date falls. The tables of years contains portions relating to Julian, Old Style, and Gregorian systems.

3,800,455

DOUBLE ACTING TRIGGERING MECHANISM FOR A DOUBLE BARRELLED SPORTING GUN

Georges Drevet, Saint Etienne, France, assignor to Manufacture Francaise d'Armes & Cycles de Saint-Etienne, Saint-etienne Loire, France

Division of Ser. No. 821,297, May 2, 1969, Pat. No. 3,636,646.
This application Mar. 4, 1971, Ser. No. 120,924
Claims priority, application France, Oct. 22, 1968, 68.210
Int. Cl. F41c *19/00*
U.S. Cl. 42—42 R **3 Claims**



A double barrelled drop-down sporting gun including means for locking the breech in its closed condition by means

of pins carried by the barrel and engaging the remaining barrelled section of the gun upon operation of a toggle lever which is locked in its barrel unlocking position as long as the barrel is open. The gun is furthermore provided with means through which the trigger controlling the firing through one barrel is mechanically connected with the triggering means for the other barrel in a manner such that after firing one shot through the one barrel the marksman may actuate the same trigger again so as to fire through said other barrel.

3,800,456

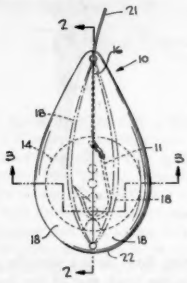
FISH HOOK CASE CONSTRUCTION

Joseph L. Rowe, 5809 Barberry Ln., Portsmouth, Va.

Filed May 26, 1972, Ser. No. 257,448

Int. Cl. A01k *97/06*

U.S. Cl. 43—25.2 **2 Claims**



A fish hook case of resilient rubber-like material having a hook receiving compartment made accessible through a slit in the case which may be opened by applying inward pressure along the slit from opposite ends thereof. The edges of the slit are both slanted in the same direction thereby preventing the hook from accidentally being removed from its compartment, and sloping anchor studs are provided in the compartment for anchoring various sized hooks therewithin.

3,800,457

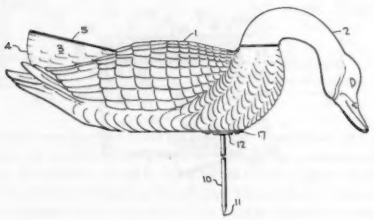
SELF-HEADING WILD FOWL DECOYS

Gilbert R. Barrett, 4492 Redman Ave., Apt. N, Omaha, Nebr.

Filed May 31, 1972, Ser. No. 258,417

Int. Cl. A01m *31/06*

U.S. Cl. 43—3 **3 Claims**



A goose or duck decoy comprising a body portion substantially in the shape of a goose or duck or other wild fowl, the body portion having a flat surface mounted on the body near the posterior of the body along the top center line of the body perpendicular to the top surface of the body, a head portion removably attached to this body portion and a mounting stake, the mounting stake comprising a tubular rod having a pointed end and a flat end and having a first flat, bearing surface attached to the rod, between the flat end and pointed end, the flat end of the rod fitting within a sleeve having a low coefficient of friction within the body of the decoy. The sleeve having a second flat bearing surface attached to the end of the sleeve at the outside of the body such that the two flat bearing surfaces contact each other. These decoys are self-heading i.e., they automatically face into the wind.

3,800,458

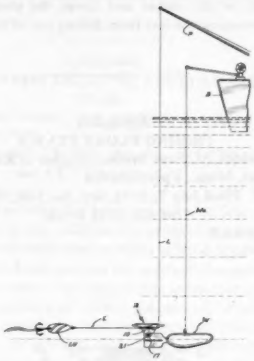
COMBINATION ONE WAY OR TWO WAY FISH LINE RELEASE DEVICE

Melvin Swanby, 716 Old Howard Hill Rd., Duluth, Minn.

Filed Mar. 29, 1973, Ser. No. 346,072

Int. Cl. A01k *91/00*

U.S. Cl. 43—43.12 **13 Claims**



A device for releasably mounting a fish line including a body member having a pair of spaced apart front and rear support members each having a hole therethrough through which is slidably extended a rod having an eye formed on one end with the other free end extending outwardly of the front support. The body is formed with first and second line-receiving holes together with a spring for urging the end of said rod outwardly of said front support. A fish line extends in a first loop formation through the eye of the rod and the first and second line-receiving holes and is engaged with the free end of the rod. A first portion of the line extends rearwardly of the eye and a second portion of the line is formed into a second loop formation and passed through the second line-receiving hole into engagement with the free end of the rod with the free end of the second portion attached to a fish pole. When tension is placed on the line, the rod is pulled rearwardly to withdraw the free end of said rod from both of said loops to release said line from said device.

3,800,459

QUICK CHANGE SLIDING SINKER

Richard J. Fleischaker, 64 W. Iowa, St. Paul, Minn.

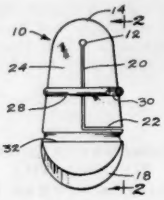
Filed June 8, 1973, Ser. No. 368,346

Int. Cl. A01k *95/00*

U.S. Cl. 43—44.9 **7 Claims**

A quick change sliding sinker is provided having a top and bottom end. A slide hole extends through the sinker body from one side of the sinker to the other and is located closer to the top end of the sinker than the bottom end. A fishing line entry slot is provided in the sinker. One end of the slot connects with the hole and the other end extends through one side margin of the sinker at a point located closer to the bottom

end of the sinker than the hole. A line retaining means such as a rubber O-ring is provided on the side of the body of the



sinker between the hole and the other end of the slot to encircle the body of the sinker and cover the slot on each side, thereby preventing the line from falling out of the hole.

3,800,460

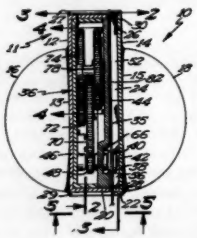
FISHING FLOAT DEVICE

James H. Holder, St. Paul, Minn., assignor to Raymond D. Perry, St. Paul, Minn., a part interest

Filed July 7, 1972, Ser. No. 269,791

Int. Cl. A01k 91/00

U.S. Cl. 43—44.9 **10 Claims**



A fishing float or bobber device castable with a fishing rod, the device including a case with flotation chambers, a pair of cooperating drums to engage fishing line passing through the case, and a gear train rotatably coupled to one of the drums to receive rotational energy from the drum in response to fishing line moving past and rotating the drum. The bobber is connected to a fishing line at a first position located a predetermined distance above the leader, and as a fisherman reels in the line and the bobber contacts the end of the fishing rod, the line continues to move through the bobber, rotating the drums and turning the gear train which winds a spring from an initial condition to a spring loaded condition. When the fisherman casts the bobber into the body of water, the spring loaded gear train unwinds, returning to the initial condition and transmitting rotational energy back to the drums to produce relative movement between case and line to return the bobber to its first position, resulting in the fisherman being able to repeatedly cast the bobber and line to a desired section of lake and insure that his bait is the predetermined distance below the surface of the water.

3,800,461

FISHING FLOAT DEVICE

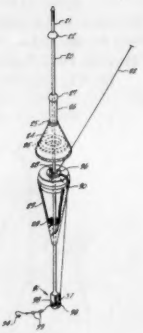
Jacob Jacobi, Noorden, Netherlands, assignor to Syl-Mark Enterprises, Northridge, Calif.

Filed Dec. 16, 1971, Ser. No. 208,827

Claims priority, application Netherlands, Dec. 16, 1970, 7018350

Int. Cl. A01k 93/00

U.S. Cl. 43—44.88 **10 Claims**



A self-adjusting float device slidably attached to a fishing line to maintain the hook end of the line at a predetermined position with respect to the bed of a body of water. The float comprises a guide member and a body member interconnected for relative movement with the line extending between the members. The said guide and body members are brought together by clamping means to fix the line therebetween when tension in the line is reduced and are separated to release the line when tension in the line is increased as a result of a tractive force applied to the line.

3,800,462

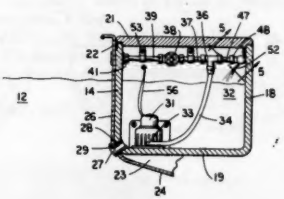
LIVE-WELL AERATOR

Charles Ray Coyle, 3412 Stoneycrest, Bloomington, Ind.

Filed Aug. 3, 1973, Ser. No. 385,226

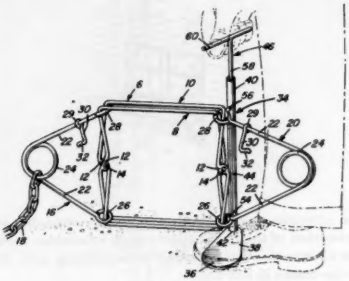
Int. Cl. A01k 97/04

U.S. Cl. 43—57 **16 Claims**



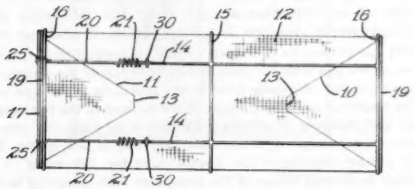
A submersible, battery operated, bilge pump located within a live-well in a boat serves to pump live well water through a hose to a section of rigid tubing having small holes along its length above the water surface to spray water back into the well at a 45° angle, for aeration and cooling. A length of plastic tubing from the rigid tube enables overboard discharge of a portion of pumped water as determined by a valve setting, to keep fresh water coming into the well through an underwater entrance port.

3,800,463
SPRING TRAP SETTER
Leo E. Treadwell, R.F.D. No. 3, Box 378, Barrington, N.H.
Filed May 4, 1972, Ser. No. 250,324
Int. Cl. A01m *23/28*
U.S. Cl. 43—97 **1 Claim**



A trap setter which lends itself to safe setting use when properly attached to a Conibear multiple jaw animal trap equipped, at either one or both ends, with spring-biased V-shaped jaw closing units. This setter, broadly construed, resembles a bicycle tire pump. It embodies a cylinder positioned and held by a base or foot piece and has a T-shaped manually controlled plunger rod and upper and lower coordinating hooks. The bill portions of the hooks are releasably hitched to terminal eyes on the free ends of the usual spring-biased arms on said V-units and which are forcibly drawn and safely linked together by a pivoted arm latching hook. By compressing and latching both units, the then inactive jaws allow the trigger means to be attached in an acceptably safe manner.

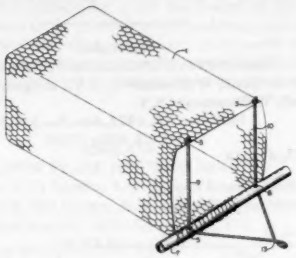
3,800,464
FISH TRAP
Gordon J. Parker, P.O. Box 131, Marine, Minn.
Filed July 13, 1972, Ser. No. 271,273
Int. Cl. A01k *69/06*
U.S. Cl. 43—100 **5 Claims**



A fish trap constructed from plastic mesh combined with a wire frame. A removable entrance cone may be constructed from wire mesh bent about a support frame or plastic mesh molded into a frame engaging plastic lip. The entrance cone is pivotally mounted on the frame, and is held in place by spring loaded hooks connected to the frame.

3,800,465
FISH AND CRAB TRAP
Harry E. Rea, 4667 Camelot Dr., New Orleans, La.
Filed May 1, 1973, Ser. No. 356,090
Int. Cl. A01k *69/10*
U.S. Cl. 43—105 **6 Claims**

A basket means has a resilient mouth, cable means is attached to the basket near the mouth, and an anchor means likewise is attached to the basket near the mouth but substantially opposite the cable attachments. The cable means traverses the mouth and is loosely threaded through apertures in the anchor means.

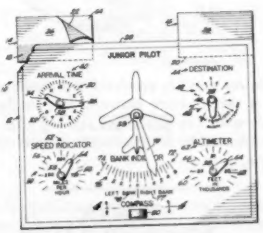


3,800,466
COMPOSITION FOR TREATING AQUEOUS ALKALINE FUEL
Allyn H. Heit, San Mateo, Calif., assignor to Sybron Corporation, Rochester, N.Y.
Filed Dec. 13, 1971, Ser. No. 207,270
Int. Cl. C10l *9/00, 1/32*
U.S. Cl. 44—4 **16 Claims**

Method for improving the burning characteristics of aqueous alkaline fuels by the addition of a sequestered metal ion as catalyst to promote oxidation of water soluble organic matter and carbon. In the Kraft process the method also substantially reduces the proportion of sodium sulfide in the flue gas.

An additive consisting of a water soluble salt of manganese, copper, iron, tin, nickel or cobalt or mixtures of these metals is solubilized in an aqueous medium at an alkaline pH with a conventional sequestering agent and added to the aqueous fuel in proportions of about 2 to about 50ppm based on the metal ion. The additive is stable and soluble in the aqueous fuel. Oxygen demand of slag is substantially reduced and slag is softer and more friable.

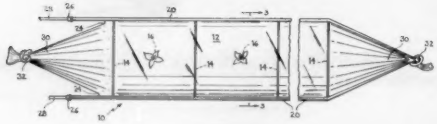
3,800,467
SIMULATED FLIGHT INDICATOR PANEL
Robert R. Brenner, 11930 N. Bay Shore Dr., Apt. 606, North Miami, Fla.
Filed Oct. 18, 1972, Ser. No. 298,670
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 B **8 Claims**



A simulated flight indicator panel is designed to amuse and to occupy the attention of a child during a flight in an aircraft. The panel includes dial means, printed on a base member, to record the destination, arrival time, the altitude called for in the flight plan of the aircraft, the speed of the aircraft, a bank indicator and alternatively a compass. The base member is comprised of a light-weight cardboard sheet, and the indicator

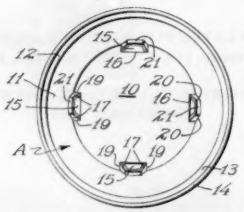
needles and attachment means are provided as punch-outs in a throw-away portion of the base member. Means are included to adhesively fasten the base member in a suspended manner to the back of the seat in front of the child using the device.

3,800,468
PROTECTIVE ENCLOSURE FOR PLANTS
David de Graff, Williamstown, N.Y., assignor to Joan L. de Graff, Williamstown, N.Y.
Filed Dec. 13, 1972, Ser. No. 314,510
Int. Cl. A01g *13/00*
U.S. Cl. 47—28 **6 Claims**



An economical and easy to erect enclosure for protecting young plants and inducing early maturity. The enclosure comprises a fluid ballasted, bow or hoop supported tunnel of translucent sheet material which encloses a row of the plants. The sheet material is stretched over the bows and where the longitudinal edges of the sheet meet the ground they are formed with continuous pockets or passages that can be filled with fluid ballast such as water to help anchor the sheet in position.

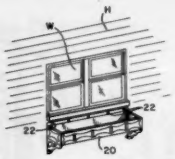
3,800,469
FLOWER POT
John F. Lau, Jr., and Gordon E. Swedberg, both of Minneapolis, Minn., assignors to T. O. Plastics, Inc., Minneapolis, Minn.
Filed July 17, 1972, Ser. No. 272,452
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **2 Claims**



Plastic flower pots are provided with drainage and aerating apertures at the juncture between the pot bottom and the tapered side wall. The side edges and top edge of these apertures are protected by an inverted U-shaped structure of tunnel-like form.

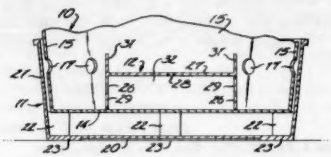
3,800,470
WINDOW BOX PLANTER
Eugene T. Kleine, 89 Ocean Ave., Massapequa, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,578
Int. Cl. A01g *9/02*
U.S. Cl. 47—36 **8 Claims**

A window box planter is fabricated from sheet-like strips of metal and extruded rail members which may be cut to length at the job site, and which are secured together with a minimum of fasteners. Cast metal end panels are secured to the extruded rail members which are also provided with integral channels for receiving end panels and the strips of metal that define the wall surfaces of the planter.



The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,800,471
FLOWER POT WITH WATER RESERVOIR
Alfred O. Adams, Spokane, Wash., assignor to Roy J. Adams, Olympia, Wash., a part interest
Filed Apr. 16, 1973, Ser. No. 351,287
Int. Cl. A01g *27/00*
U.S. Cl. 47—38 **1 Claim**

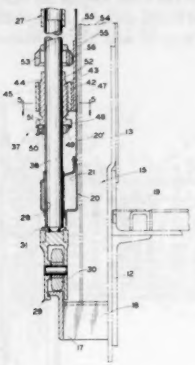


A flower pot comprises an upwardly open container having a closed, watertight bottom wall and upright side walls. A plurality of apertures are spaced about the side walls at a predetermined elevation above the bottom. A reservoir basically comprising an H-shaped channel is supported in the bottom of the pot with the cross member or top of the channel at approximately the same level as the apertures in the side wall. The reservoir provides a space in the bottom of the pot void of soil and, because of apertures formed in its walls and top, allows free passage of water into and out of the space. The elevational spacing of the apertures in the side of the container facilitates filling of the container with water up to the level of the apertures. The reservoir then is also filled with water which is allowed to gradually escape through the holes therein over an extended period of time.

3,800,472
RAILWAY CAR DOOR
Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 4, 1972, Ser. No. 312,061
Int. Cl. E05d *13/02*
U.S. Cl. 49—426 **4 Claims**

A railway car door of the laterally movable and sliding type is supported on a track beneath a door opening by means of a pair of connector assemblies adjustable to position the door relative to the opening. The connector assemblies each include a bracket connected to the door within which a

threaded sleeve is rotatably positioned. The sleeve, which is supported on a vertical pedestal connected to a slide assembly, includes a tool engageable projection and the internal threads of the sleeve and bracket are enclosed and protected by a vertically shiftable enclosing sleeve.



3,800,473

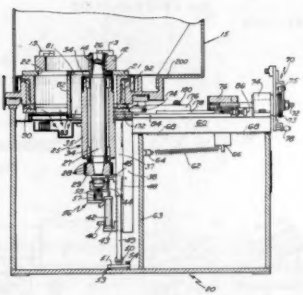
BORE GRINDING MACHINE

George Napoleon Levesque, Warwick, and Alexander Norval Booth, Jr., Esmond, both of R.I., assignors to Brown & Shapiro Manufacturing Company, North Kingstown, R.I.

Filed Aug. 4, 1972, Ser. No. 278,105

Int. Cl. B24b *19/00*

U.S. Cl. 51—5 **7 Claims**



A bore grinding machine having a horizontal work table rotatably mounted on a base. The work table has a portion of its central area cut away to form a passageway opening for a vertical tool spindle assembly which is mounted with its top portion in said opening. The tool spindle assembly is mounted on a vertical slide which allows the top portion of the spindle assembly to be raised above the top surface of the work table when in grinding position and allowed to be lowered back into said passageway opening where it is out of the way and below the top of the table during loading and unloading of the work pieces to be machined. A wheel dressing unit is mounted below the top of the passageway opening which dresses the grinding wheel upon movement thru the opening. A retractable guard cover is mounted below the top of the opening to cover the grinding wheel when a worker is loading or unloading the parts to be machined on the top of the table. A combination wheel guard and coolant hood is pivotally mounted on the top of the work table support and it covers the work piece and work table during the grinding operation while coolant is being floodingly circulated therewith. A plurality of cams are used to control the *x* axis movement of the work table with respect to the grinding wheel and the *y* axis movement of the wheel feed slide with respect to the work while a work rotation gear forming a part of the rotatable table is connected to a drive motor that controls the concurrent rotation of the work table.

3,800,474

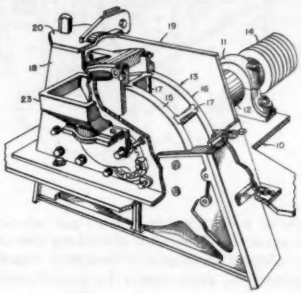
LINER PLATE JUNCTION SEAL

Joseph R. Sack, 1721 Sandra, N.W., Grand Rapids, Mich., and Bernard Fuerst, 804 Conger, N.E., Grand Rapids, Mich.

Filed June 26, 1972, Ser. No. 266,472

Int. Cl. B24c *5/06*

U.S. Cl. 51—9 **6 Claims**



The interengagement of adjacent liner plates in blasting machines is provided with a volumetrically-resilient seal, the seal being of a material capable of absorbing the energies of particles entering the junction at high velocity.

3,800,475

MACHINE FOR POLISHING A SURFACE, PARTICULARLY THE SURFACE OF A SPOOL FLANGE

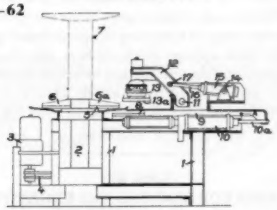
Pierre Portal, Chaumont, France, assignor to Societe Anonyme des Forges de Bologne, Bologne, France

Filed Jan. 24, 1972, Ser. No. 220,317

Claims priority, application France, Jan. 28, 1971, 71.02865

Int. Cl. B24b *7/02*

U.S. Cl. 51—62 **4 Claims**



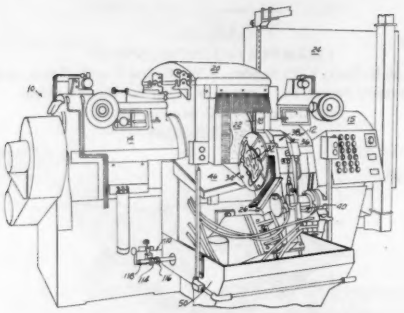
In a machine for polishing a surface, particularly the surface of a spool flange, a frame has mounted thereon a spigot which is rotatable by a suitable motor means and arranged to support a surface to be polished. An abrasive surface on at least one polishing head is arranged to be brought into contact with the surface and this head is hinged to an arm that is mounted to pivot on a carriage about an axis perpendicular to a plane passing through the axis of a spigot. The carriage is itself mounted to slide on the frame along a plane perpendicular to the axis of a spigot and is reciprocably movable, e.g. by a jack system.

3,800,476

ROTARY WORK CARRIER ARRANGEMENT FOR A DOUBLE DISC GRINDER

Herbert J. Fallon, Beloit, Wis., assignor to The Bendix Corporation, Southfield, Mich.

Filed June 12, 1972, Ser. No. 261,890
Int. Cl. B24b 5/02
U.S. Cl. 51—118 20 Claims



A work carrier is disclosed in which a pair of carriers are rotatably mounted on either side of a swing arm assembly, each carrier adapted to receive a workpiece which is held therein for grinding by a three-point rest support engaging the reverse side of the workpiece surface to be ground, and by a series of peripheral locaters to accurately position the workpiece while minimizing mechanical distortion incidental to such positioning.

Both of the carriers are rotated in such a position that the workpieces remain in continuous contact with the grinding discs during grinding with this rotation being accomplished by a fluid motor and chain drive arrangement, the chain drive being located in internal openings in a member included in the swing arm assembly so as to be totally enclosed and protected from the abrasive grit.

The swing arm assembly includes an upper swing arm assembly detachably mounted to a pivot housing adapted to be pivoted about a pivot shaft to swing the carriers into position between the discs. The upper swing arm assembly extends at an angle to the pivot housing so that the rotary drive motor may be located well above the coolant bin, and the detachable mounting allows ready replacement of the swing arm assembly without the necessity of removing the pivot housing.

A specific work ejector mechanism is also described consisting of a pair of plungers carried in a central portion of the work carrier and adapted to be axially extended by a power cylinder and ejector mechanism so as to push the workpieces from the work carrier after grinding.

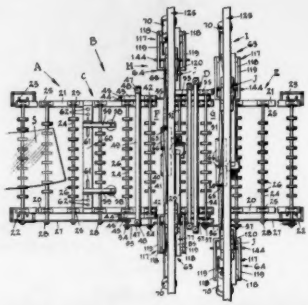
3,800,477

APPARATUS FOR SEAMING THE EDGES OF GLASS SHEETS

Joseph E. Jendrisak, 986 Grace St., Northville, Mich., and Harold E. McKelvey, 14934 Maplewood Ln., Plymouth, Mich.

Continuation-in-part of Ser. No. 91,967, Nov. 23, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,738
Int. Cl. B24b 21/16
U.S. Cl. 51—139 21 Claims

Apparatus for seaming glass sheets having curved or irregular edges precut to the desired outline. The glass sheets are conveyed along a substantially horizontal path between two pairs of seaming units located at opposite sides of said path. Each unit employs an endless, flexible, abrasive belt disposed transversely at an angle to the conveyor means. The belt of one unit of each pair engages the upper corner of the adjacent peripheral edge of the glass sheet, while the belt of the other unit of the same pair engages the lower corner of the same edge of said sheet. The inner loop of the belt is trained about a pulley mounted to rotate about a substantially horizontal axis, while the outer loop of said belt is trained about a pulley



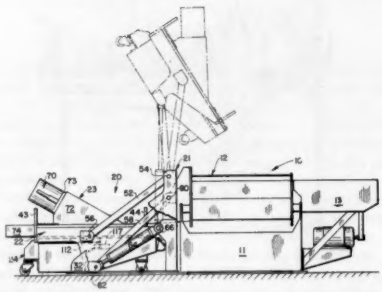
driven about an axis inclined to the vertical. Each unit is mounted to swing as a pendulum toward and away from the path of travel of the glass sheets to follow the outline of said sheets, while the belt thereof is free to slide simultaneously along said inclined pulley, said movements of the belt being initiated and controlled by the upward thrust of the glass sheets upon the belt as said sheets move progressively past the same.

3,800,478

VIBRATORY FINISHING MACHINE WITH SCREENING AND LOADING MECHANISM

John F. Rampe, and William E. Ward, both of Cleveland, Ohio, assignors to Rampe Research, Cleveland, Ohio

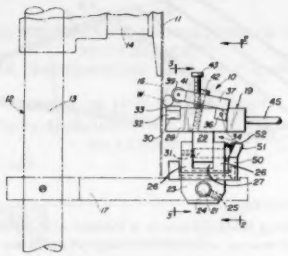
Filed Apr. 8, 1971, Ser. No. 132,321
Int. Cl. B24b 31/06
U.S. Cl. 51—163 65 Claims



A vibratory finishing machine with a screening and loading mechanism which includes a vibratory screen assembly. The screen assembly is movable between a screening position and a tub loading position. A movable hopper dolly is selectively positioned beneath the screen and when so positioned is movable with the assembly from the screening position to the loading position where the contents of a dolly pan are discharged into the finishing machine.

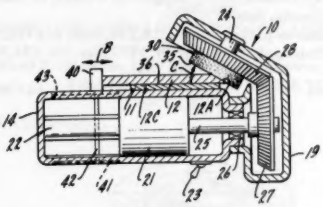
A linkage system connects the carriage and an upstanding frame of the finishing machine and is uniquely constructed so that when the carriage is raised the dolly pan is maintained in a substantially horizontal attitude until it has been elevated to the vicinity of the loading position whereupon the hopper dolly is tipped to discharge its contents into the finishing machine.

3,800,479
POLISHING ATTACHMENT FOR BELT ABRADING APPARATUS
Walter G. Heyek, 4194 N. Elston Ave., Chicago, Ill.
Filed Sept. 28, 1971, Ser. No. 184,438
Int. Cl. B24b *5/38*
U.S. Cl. 51—236 **5 Claims**



A polishing attachment for polishing work pieces of circular cross-section and attachable to an abrading apparatus having an abrasive belt. The work piece is supported by the attachment so as to be engagable with the abrasive belt and rotated thereby for polishing. The work piece supporting structure is mounted for rocking movement to advance the work piece past the belt during polishing.

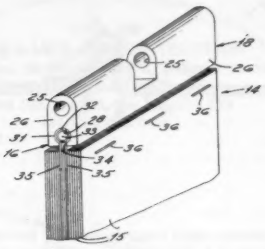
3,800,480
PORTABLE BLADE SHARPENER
Francis J. Keating, 44 E. North Ave., Lake Forest, Ill.
Filed Feb. 28, 1973, Ser. No. 336,750
Int. Cl. B24b *19/00, 23/00;* **B21k** *19/00*
U.S. Cl. 51—249 **6 Claims**



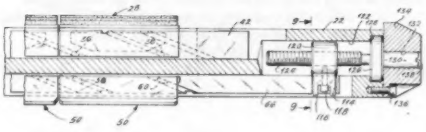
A portable blade sharpener which is useful for sharpening lawnmower blades without having to remove the blade from the mower and which sharpens the blade accurately to an acute angle formed by a grinding wheel and a die plate.

3,800,481
HINGE TYPE UNITS PERMANENTLY MOUNTED IN A CYLINDRICAL HUB STRUCTURE WITH REPLACEABLE FINISHING PACKS PROVIDED FOR THE UNITS
James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.
Filed May 15, 1972, Ser. No. 253,237
Int. Cl. B24b *9/02*
U.S. Cl. 51—337 **26 Claims**

The rotary flap or finishing wheel or tool has a plurality of radially extending finishing units or packs mounted in a circumferential series on a hub structure. The finishing units are mounted on the body structure by a dual clip-type assembly including an inner axially elongated and rigid clip member forming the primary component of the pack and an axially elongated outer clip member supporting or carrying the finishing or fill material and forming the secondary components of the finishing unit. The mount of the inner clip member is afforded at an inner axially extending through-bore therein which encircles an axial pin component located adjacent the outer periphery of the hub structure. The inner clip member has an axially elongated, keyhole-type slot or groove that opens re-entrantly along the entire axial length of the outer free clip end. Replaceable units of fill or finishing material are each constituted in part by the secondary or outer clip component or member having radial arms which are coextensive in axial length with the finishing material and are stapled in place within the latter. The arms integrally connect with one another at a radially inner bight at which, along with a telescoped inner wear sleeve, the pre-assembled finishing unit-secondary clip member — is telescoped into the re-entrant keyhole recess of the primary clip member. Either one or both of the clip members of each finishing unit are mounted for pivotal movement.



3,800,482
HONING MANDREL WITH ERROR COMPENSATION MEANS
Joseph Sunnen, 400 S. Warson Rd., Ladue, Mo.
Filed July 31, 1972, Ser. No. 276,858
Int. Cl. B24b *9/02*
U.S. Cl. 51—339 **18 Claims**



A multiple stone, multiple guide shoe honing mandrel particularly suitable for honing long bores and bores formed by spaced surface portions including honing a plurality of aligned surfaces such as the aligned main bearing surfaces on engine blocks and the like, said mandrel having provision for spaced rows of honing stone and guide shoe assemblies all of which are adjustable radially to change the operating honing diameter thereof, the means for adjusting the radial positions of the stone assemblies being located for adjustment at the opposite end of the mandrel with respect to the means for adjusting the radial positions of the guide shoe assemblies to compensate

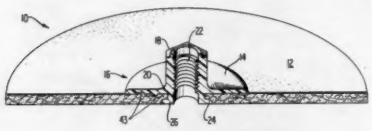
for expansion and contraction of the said assemblies due to temperature changes, material growth and for other reasons.

3,800,483

METHOD OF MAKING GRINDING WHEEL MOUNTS

William F. Sherman, 2 Burtenmar Cir., Paxton, Mass.

Filed Jan. 22, 1971, Ser. No. 108,789
Int. Cl. B24b *17/00;* **C08h** *17/12;* **C08g** *51/12*
U.S. Cl. 51—376 **4 Claims**



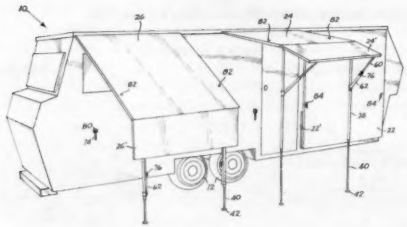
An abrasive wheel comprising a disc having a central aperture therein and a one-piece plastic hub molded onto the disc, the hub including a threaded aperture, a broad circular flange, and a tubular projection extending through the aperture in the disc and into close cooperation with a countersunk portion at the opposite side of the disc from the main body of the hub and the circular flange.

3,800,484

AWNING FOR TRAVEL TRAILERS AND THE LIKE

Robert D. Marshall, 1010 Terrace Dr. N.W., Salem, Oreg.

Filed July 20, 1972, Ser. No. 273,505
Int. Cl. E04b *1/346, 7/16*
U.S. Cl. 52—69 **9 Claims**



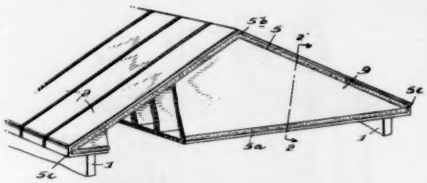
A plurality of main awning panels are mounted on the side of a travel trailer or other mobile housing for pivotal and longitudinal adjustment, and an auxiliary awning panel is pivoted to the outer end of each main panel. Main telescoping legs are pivoted to the main panels for supporting the latter from the ground at various angles of adjustment relative to the mobile housing, and auxiliary telescoping struts interconnect the auxiliary panels and associated main legs for supporting the auxiliary panels in various angles of adjustment relative to the main panels. The auxiliary panels are foldable against the inner sides of the main panels, with the legs and struts interposed between them, for securing the assembly in folded condition against the side of the mobile housing.

3,800,485

BUILDING ROOF STRUCTURE

Herbert G. Yates, Yardley, Pa., assignor to Panokraft Corporation of Canada Limited, Dorval, Quebec, Canada

Filed July 1, 1971, Ser. No. 158,863
Int. Cl. E04b *7/02;* **E04c** *3/02*
U.S. Cl. 52—90 **14 Claims**



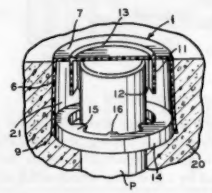
A Building Roof Structure is formed of a series of modular sections or trusses assembled to support or form a cover over a building area. Each section or truss is formed of a sheet of relatively heavy paperboard having a planar surface, with downturned opposite flanges at the edges thereof. The sections are assembled in side-by-side relation to the edges of adjacent sections and joined together by suitable fastening means. The cracks between the sections or trusses are sealed by a strip of fibrous material adhesively secured to one or more of the inturned flanges and forming a chord between opposite sides of the truss section. The planar top surfaces of the sections may also be covered with a mat of fibrous material, such as fiberglass, adhesively secured thereto which will make the roof both waterproof and add structural strength to the paperboard sections.

3,800,486

PIPE SPACER

Richard Harvey, Omaha, Nebr., assignor to William H. Harvey Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 70,179, Sept. 8, 1970, abandoned. This application July 24, 1972, Ser. No. 274,309
Int. Cl. E04b *1/00*
U.S. Cl. 52—98 **14 Claims**



A spacer or emplacement former is provided to fit about a soil pipe or the like that is to be substantially embedded in or surrounded by a construction material such as concrete. The spacer reserves an annular space in the construction material immediately surrounding the pipe for the emplacement of subsequent connection or emplacement of other plumbing fixtures.

The present spacer comprises a generally cup-shaped member, adapted to receive a pipe or the like telescopically, having an open end, and also having a closed but removable end. The spacer is aligned with pipes of various diameters by aligning means adjacent its closed end adapted to align the spacer with pipes of various diameters, and by means of a series of fingers that extend radially inwardly of the spacer adjacent its open end. The fingers are formed of friable material

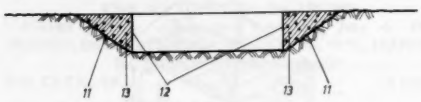
of substantial cross section and are adapted to break off at essentially any suitable radial distance within the lengths of the fingers in order to provide aligning surfaces on the ends of the fingers to accommodate inwardly of the fingers and closely fit, pipes of varying diameters to aid in aligning the spacer with such pipes. Preferably, the fingers are formed of friable foamed plastic material.

3,800,487

SWIMMING POOL DEVICE AND METHOD OF MAKING SUCH DEVICE

Eva Eliasson, Regementsgatan 52 A, S-217 48, Malmo, Sweden

Filed Mar. 26, 1970, Ser. No. 22,869
Claims priority, application Sweden, Apr. 9, 1969, 4972/69
Int. Cl. E02d
U.S. Cl. 52—169 **2 Claims**



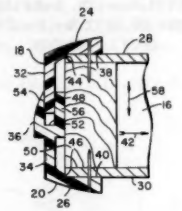
A permanently installed in-ground swimming pool having vertical peripheral pool walls is disposed within an excavated area of ground such that the earthwall surrounding the pool walls slopes from ground level down to the lowermost portions of the pool walls, the space between the sloping earthwall and the vertical pool walls being filled with a lightweight, heat insulating, draining, fill material such as lightweight pellets of burned expanded clay, shale or the like. The ground outside of the pool walls should be excavated such that the slope of the downwardly inclining earthwall is about or somewhat less than the angle of repose of the ground.

3,800,488

DOOR JAMB WITH MITERED JOINTS AND L-SHAPED BRACKETS

Clifford D. Swanson, 2107 Wellesly Dr., Lansing, Mich.

Filed Feb. 16, 1972, Ser. No. 226,753
Int. Cl. E06b *1/30*
U.S. Cl. 52—212 **3 Claims**



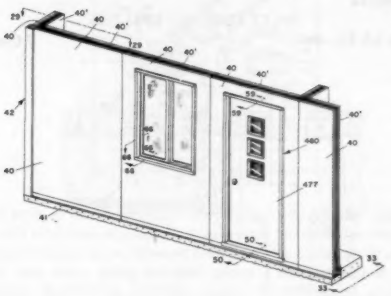
Building structure for finishing a building opening in a wall including a pair of foamed synthetic resin elongated members having a generally L-shaped cross section including first portions adapted to extend in the planes of the opposite side surfaces of the wall, which first portions converge slightly toward each other in assembly to facilitate tight securing of the elongated members at the edge of the building opening, said elongated members cross sections further including second portions extending toward each other through the building opening at the edge thereof, one of which includes a third portion forming a longitudinal slot for receiving the end of the second portion of the cross section of the other of the elongated members whereby the building structure may be installed in walls having different thickness, said third portion of the one elongated member cooperating with offsets in the first portions of the elongated members to space the second portions of the elongated members from the frame of the wall opening at the edge of the opening. Mitered joints are provided between pairs of such elongated members including an L-shaped bracket extending into the slots at the mitered joints for securing the mitered joints together, which L-shaped brackets have Ridges on the ends thereof extending into grooves within the slots in the third portion of the one elongated members at the mitered joints and notches in the other elongated members at the mitered joints for accommodating the L-shaped brackets.

3,800,489

MODULAR WALL CONSTRUCTION

G. Newton Boice, McKeesport, Pa., assignor to Structural Systems, Inc., McKeesport, Pa.

Filed Jan. 3, 1972, Ser. No. 214,539
Int. Cl. E06b *1/04*
U.S. Cl. 52—208 **6 Claims**



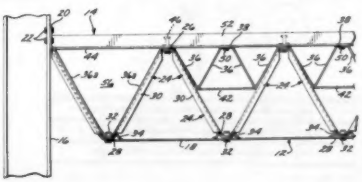
A wall structure comprising opposed panels supported on spaced apart vertical and horizontal channels mounted on support elements having differently configurated structures. The space between the opposed panels can remain open or be filled with a permanent building material. A variety of wall base constructions are provided, together with detachable frame assemblies for mounting doors and windows in the wall structure.

3,800,490

BUILDING STRUCTURE FOR FLOORS AND ROOFS

John Conte, 1025 Middle Ave., Menlo Park, Calif.

Filed Aug. 19, 1971, Ser. No. 173,088
Int. Cl. E04b *1/18*; **E04c** *3/32*
U.S. Cl. 52—250 **4 Claims**



A building structure made of light weight plate material for easy prefabrication and on-site assembly to form floors and roofs. In one embodiment the structure forms a truss-like beam comprised of primary and secondary truss assemblies. Optimum load transfer results from nesting of these assem-

blies. The primary truss assembly includes diagonal web elements which are secured to a bottom chord. The secondary truss assembly includes elements nested within and engaged upon the primary web elements and secured together by bottom chords. In addition a top chord is secured to both web primary and secondary elements.

In another embodiment the building structure forms a floor structure. The secondary truss assembly essentially becomes the floor and a plurality of the primary truss assemblies are spaced apart to provide the beams. The web of the floor is defined by a folded floor plate covered by a top chord in the form of a continuous deck plate and overlying concrete slab. The nested primary and secondary truss assemblies interact to share the load and thereby reduce the structural material needed.

3,800,491

RIBBED CONCRETE SLAB

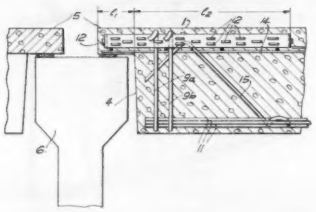
Klaus Gunia, Neuwied, Rhine, Germany, assignor to Friedr. Remy Nachfolger KG, In der Sohl, Germany

Filed Nov. 24, 1971, Ser. No. 201,811

Claims priority, application Germany, Nov. 28, 1970, 2058714

Int. Cl. E04b *5/04;* **E04c** *2/06*

U.S. Cl. 52—602 **7 Claims**



The invention relates to a ribbed concrete slab, the slab of which is prolonged in its longitudinal direction beyond the two ends of the rib in order to form a bearing in each case, and in order to reinforce the said bearing an additional reinforcement is provided extending into the bearing and arranged in the region of the rib.

3,800,492

REINFORCEMENT FOR REINFORCED-CONCRETE STRUCTURES

Georgi Oroschakoff, Simon-Denk-Gasse 7/7, Wien IX, Austria

Filed June 7, 1971, Ser. No. 150,579

Claims priority, application Austria, June 10, 1970, 5236/70

Int. Cl. E04c *5/01*

U.S. Cl. 52—662 **2 Claims**

A reinforcement for reinforced-concrete structures is divided into at least two separate, standardized reinforcing sections, which can be combined with each other and consist each of a set of rigidly connected rods extending parallel in one direction. The sections belong to a modular system of sections having graded lengths and graded steel cross-sections and are adapted to be assembled to form two-dimensional reinforcements having crossing reinforcing rods of any desired length and any desired steel cross-section.

3,800,493

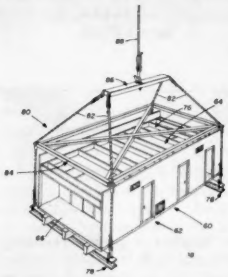
DWELLING CONSTRUCTION SYSTEM

Johnston R. Livingston, Denver, Colo., assignor to Marcor Housing Systems, Incorporated, Denver, Colo.

Continuation-in-part of Ser. No. 166,545, July 27, 1971, abandoned. This application Mar. 1, 1972, Ser. No. 230,803

Int. Cl. E04h *1/04;* **E04g** *21/00*

U.S. Cl. 52—745 **16 Claims**



In a dwelling construction system, a multi-story, multi-family building comprises prestressed concrete pallets which are supported between load bearing walls to form the floors and the ceilings of individual dwellings. Each dwelling includes a service core comprising an enclosure formed on one of the pallets and complete mechanicals for the dwelling. The service cores are fabricated by mass production techniques and are subsequently transported to the building site for installation. In some instances the service core comprises a cor plete dwelling, in which case the enclosure of the service core may form the exterior walls and the roof of the dwelling.

3,800,494

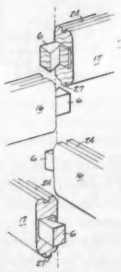
CONNECTING STRUCTURE FOR TIMBERS

Gilbert D. Hall, 1940 Montecito Ave., Santa Rosa, Calif., and Paul Purpura, 519 Madrone Dr., Yuba City, Calif.

Filed Mar. 20, 1972, Ser. No. 236,131

Int. Cl. F16b *7/00*

U.S. Cl. 52—753 T **5 Claims**



A joint to connect sawed timber, particularly natural logs which have been turned or shaped to be uniform for making or interfitting logs so as to form watertight joints. The mating ends of adjacent logs are provided with matching half dovetail cores which are perpendicularly insertable in overlapping

relation into transverse notches formed around a core in an intersecting log. The half dovetail cores when inserted together form a core the length of which is appreciably less than the overall width of the timber so that the vertical edges of the timbers on opposite sides of the notches in the intersecting core are tightly drawn against the adjacent opposite sides or faces of the intersecting timber. The core formed by the half dovetail cores is reduced both in height and width and the height of the completed core is less than one-half of the height of the timber and is equally spaced from the opposite longitudinal edges or sides of the timber. The core in the intersecting timber is substantially the same dimensions and location relatively to the intersecting timber as the combined half dovetail cores.

3,800,495

DOUGH TREATING AND TRAY LOADING MACHINES

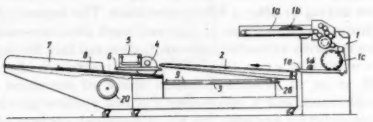
Kate Kemper, Lange Strasse 8-10, 4833 Neuenkirchen near Gutersloh, Germany

Filed July 2, 1971, Ser. No. 159,282

Claims priority, application Germany, July 4, 1970, 2033315; Sept. 24, 1970, 2047017; Nov. 30, 1970, 2058913

Int. Cl. B65b *5/10, 57/00, 63/00*

U.S. Cl. 53—52 **6 Claims**



The present invention has reference to improvements in dough treating machines and deals especially with the formation of dough and like bakery products and their transfer after being loaded on pivotable or tiltable supports which are swingably connected to one or more carriers. These carriers are discharged from one magazine and move along a predetermined course and are then displaced relative to said course to arrive at another magazine whence said carriers are dispatched and deliver their dough products for final treatment to a plant, such as an oven plate.

3,800,496

MACHINE FOR FILLING RECEPTACLES IN PARTICULAR FOUNTAIN PEN CARTRIDGES

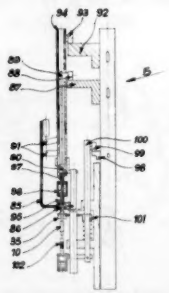
Gerard Bardet, Paris, France, assignor to Automatisme & Technique, Val de Marne, France

Filed Jan. 23, 1973, Ser. No. 326,111

Claims priority, application France, Feb. 18, 1972, 72.05635

Int. Cl. B65b *3/12, 3/32, 7/28*

U.S. Cl. 53—64 **11 Claims**



A machine for filling receptacles comprising an empty receptacles supply means, at least one receptacle testing means, a means for filling receptacles, a means for sealing receptacles and a means for removing the filled receptacles. Each means is constituted by at least one operational barrel and the means are connected by transfer barrels. The transfer of receptacles and the operations are effected in a continuous kinematic manner.

This machine is intended in particular for filling and testing fountain pen cartridges, small receptacles for pharmaceutical products, etc. . . .

3,800,497

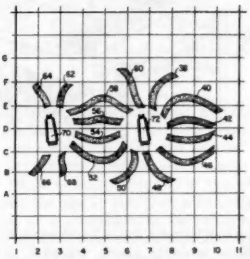
METHOD OF WRAPPING A CONFECTIONARY

Daniel Pearson, Culver City, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 164,868, July 26, 1971, abandoned. This application Oct. 4, 1972, Ser. No. 294,826

Int. Cl. B65d *65/12*; **B65b** *11/16*

U.S. Cl. 53—14 **4 Claims**



A method of wrapping a confectionary wherein the confectionary wrapping is generally transparent but includes visually contrasting portions disposed relative to the transparent areas such that upon being wrapped about a circular article, the visually contrasting portions appear as variegated arcuate bands about the circular edge of the article.

3,800,498

SLEEVE FILM CUTTING DEVICE

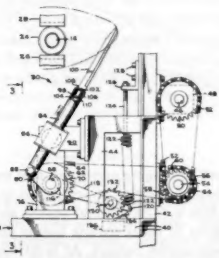
Mitsugu Suzuki, 11-106, Yabe-Danchi/321, Yabe-cho, Totsuka-ku, Yokohama-shi, Japan

Filed June 8, 1972, Ser. No. 260,797

Claims priority, application Japan, June 17, 1971, 46-51834[U]

Int. Cl. B26d *7/24*

U.S. Cl. 53—77 **1 Claim**



This application discloses a horizontal form, fill and seal machine provided with a conveyor for moving two or more groups of prepackaged articles, at equally spaced intervals, to a forming device that shapes film from a roll into a sleeve or

tube surrounding the groups of spaced articles. After the articles are encapsulated in the tube, a cutting device, located adjacent the conveying paths of the articles and which is operated in synchronism with the conveyor, severs the web tube between the groups of articles while the articles are in motion. Thereafter the groups of articles, each of which are within their individual sleeve, are conveyed to a heat tunnel in order to shrink the sleeve crowding the articles together.

3,800,499

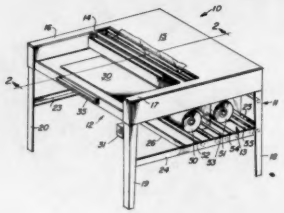
PACKAGING MACHINE

Irving Feldman, 43 Barnes St., Providence, R.I.

Filed Oct. 10, 1972, Ser. No. 296,241

Int. Cl. B65b *67/10*

U.S. Cl. 53—168 **5 Claims**



A packaging machine for use in hand wrapping of articles in a flexible, heat sealable sheet material. The packaging machine has at least four corner supports to provide balance to a fixed wrapping platform and a movable heat sealing tray in all positions of the heat sealing tray. A sheet material feed system extends to an operative supply position to allow dispensing of one of at least two different types of sheet material while positively preventing dispensing of other than that one sheet material.

3,800,500

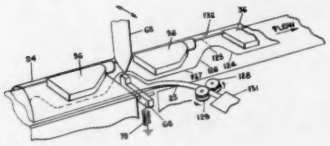
PACKAGING APPARATUS

William H. Solomon, Grand Rapids, Mich., assignor to Oliver Machinery Company, Grand Rapids, Mich.

Filed May 30, 1972, Ser. No. 258,009

Int. Cl. B65b *9/06, 51/26*

U.S. Cl. 53—180 **15 Claims**



An improved packaging apparatus and method in which individual contoured articles are wrapped in a heat shrinkable film and the film is then cut and sealed along the contour of each article prior to being shrunk tightly about each article in a separate heat shrink tunnel. At least one profiling sealing means is reciprocated at a predetermined rate transverse to the flow of the film and articles contained therein. In one embodiment, one profiling sealing means seals one edge of the film about the article along a contour. In other embodiments, two profiling sealing means seal both edges of the film along either mirror image contours or two dissimilar contours.

3,800,501

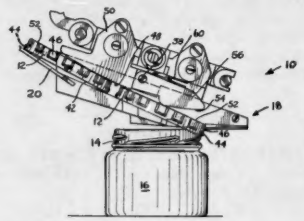
CAP FEEDING APPARATUS

Helmuth E. Raatz, Mount Prospect, and Eugene Melzer, La Grange, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,233

Int. Cl. B65b *7/28;* **B67b** *3/08*

U.S. Cl. 53—315 **7 Claims**



An apparatus for improved feeding of jar or bottle caps from a supply area to a pick up point where the edges thereof are engaged by bottles or jars passing therebeneath for application during or after a filling operation. The improved track apparatus includes a pair of opposed track elements each having an inwardly extending, upwardly directed face for supporting a margin of a cap area wherein the tracks are of reduced width so as to provide an open space of increased width therebetween, and a relieved or cut out portion providing a stop element for engaging the lower marginal portions of a cap and detaining it in a predetermined position to be picked up by passing jar or bottles. The invention is an improvement over previous devices intended for the same purpose but usually constructed so as to include spring loaded, transversely acting pins. The apparatus of the invention engages the jar cap on a marginal portion thereof which is always of uniform, circular construction and accordingly, caps with indented or textured skirt portions may be satisfactorily handled at high rates by this device.

3,800,502

CLOSURING CONTAINERS

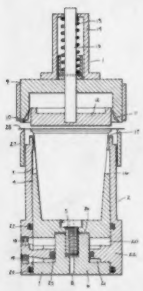
Emile Raymond Vermeulen, Ghent, Belgium, assignor to Sidaplax N.V., Gentbrugge, Belgium

Division of Ser. No. 868,162, Oct. 21, 1969, Pat. No. 3,628,301. This application June 1, 1971, Ser. No. 148,412

Claims priority, application Great Britain, Oct. 28, 1968, 51058/68

Int. Cl. B65b *7/28*

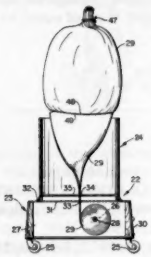
U.S. Cl. 53—329 **2 Claims**



Method and apparatus for closuring a lipped container with a sheet of biaxially orientated thermoplastic by pushing down on portions of the sheet overlapping the lip of the container

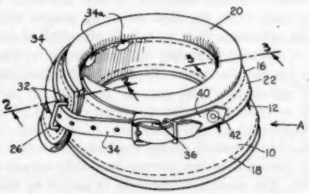
with a heating element which softens but does not heat seal the sheet to the container, while at the same time clamping heat softened overlapping portions tightly against the container to prevent them from shrinking. The pushed down portions are then crimped under the lipped edge whereupon the portion of the sheet extending over the open top of the container is shrunk by heating to pull the crimped portions tightly underneath and against the lip. The package thus formed includes a sheet closure of biaxially orientatable thermoplastic, the closure having an outer biaxially orientated portion crimped tightly under the lip of a container without being heat sealed thereto and an inner, taut, relatively unorientated portion extending over an open end of the container.

3,800,503
BAG DISPENSER AND HOLDER
Robert G. Maki, 9505 W. Center Rd., Omaha, Nebr.
Filed Aug. 10, 1972, Ser. No. 279,324
Int. Cl. B65b *67/04*
U.S. Cl. 53—390 **9 Claims**



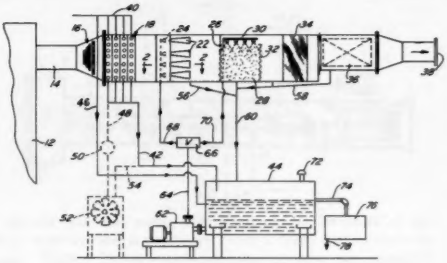
A base or magazine for holding a plurality of bags of polyethylene or similar plastic material, which are connected together by welded joints and capable of being separated by perforated lines along the bottom edge of each such joint, so that the separated bag has a closed bottom leaving a bag next to the separated bag having an open mouth. A bag holder is supported on the base and the bags are dispensed from the top of the base into the holder. The holder is of a size to accommodate one bag the open mouth of which is supported on the holder rim until filled, after which the filled bag is drawn upwardly from the holder and separated from the bag next adjacent thereto and which is then positioned in an open position within the holder.

3,800,504
HORSE BOOT
Francis W. Gregory, 7 Rose Garden, Taylors, S.C.
Filed June 27, 1972, Ser. No. 266,646
Int. Cl. B68c *5/00*
U.S. Cl. 54—82 **5 Claims**



A boot for use on the front leg of a horse for inducing the horse to raise his legs to a desired show position. The boot includes a mobile mass, which in one particular instance, shifts as the horse walks.

3,800,505
METHOD AND APPARATUS FOR REMOVING OIL FROM EFFLUENT GAS
Robert J. Tarves, Jr., Blackwood, N.J., assignor to Air Pollution Specialties, Inc., Philadelphia, Pa.
Filed Oct. 11, 1972, Ser. No. 296,731
Int. Cl. B03c *3/01*
U.S. Cl. 55—8 **10 Claims**



Oil is removed from hot effluent gas by cooling the gas, scrubbing the gas in two stages, removing entrained droplets in a demister and introducing the gas into an electrostatic precipitator. After the gas leaves the electrostatic precipitator, approximately 99 percent, by volume, of the oil is removed from the gas and the gas is rendered substantially invisible. The gas is thus in a condition to be returned to the atmosphere. The apparatus consumes little energy and is relatively maintenance free in operation. A portion of the water used in a heat exchanger for cooling the gas may be used in the two scrubbing stages and recycled within the system.

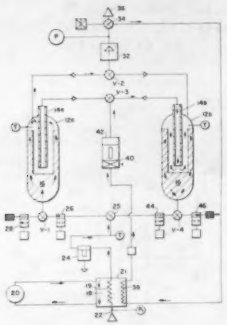
3,800,506
PROCESS
Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 23, 1972, Ser. No. 282,932
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **19 Claims**

There is described the separation of aliphatically-unsaturated hydrocarbons from gaseous mixtures by the combined use of flooded-cell, liquid barrier permeation and metal complexing techniques. The liquid barrier is disposed as a continuous, distinct or separate liquid phase in contact with a film membrane composite, and the barrier contains complex-forming metal ions in aqueous solution. The film is composed of a hydrophobic membrane having a hydrophilic surface on its feed inlet side. The hydrocarbon feed gas is contacted with the liquid barrier and the presence of the hydrophilic surface on the feed inlet side of the hydrophobic film membrane serves to improve the selectivity of the separation. The metal ions in the liquid barrier may be, for example, noble metal, nickel, mercurous, cuprous or other metal ions, and mixtures of metal ions, with or without other cations, may be used. The separation of ethylene from ethane and methane is of particular interest.

3,800,507
LOW PRESSURE AIR DEHYDRATOR
Clarence F. Howell; John D. Brownrigg, and George H. Cooper, all of Bridgton, Maine, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 23, 1970, Ser. No. 48,995
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **3 Claims**

A method and apparatus for regenerating an adsorbent bed. A portion of the gas effluent stream used as a purge gas is

cooled by passing it through a heat exchanger. The feed stream entering the onstream bed also passes through the same heat exchanger. The precooled purge gas then flows



through the adsorbent bed being regenerated to reduce the temperature of the bed to operating temperature. The invention combines the features of both heated and heatless dryers to minimize purge gas and equipment requirements.

3,800,508

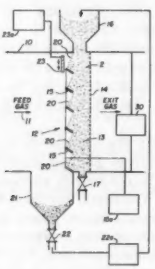
RESTRAINED BED FILTER-REACTOR

Frederick A. Zenz, P.O. Box 205, Route 9D, Garrison, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,689

Int. Cl. B01d *29/08*

U.S. Cl. 55—96 **13 Claims**



There is disclosed a granular bed filter in which the granular material is retained in the bed by the pressure of the fluid stream entering the filter. When it is desired to clean the filter of accumulated filter cake, the pressure, i.e., the velocity of the fluid stream is reduced so that bed material flows from the filter. It is also disclosed that the filter can be used in chemical processes in which the granular bed material is the feed material for the process.

3,800,509

ELECTROSTATIC PRECIPITATOR

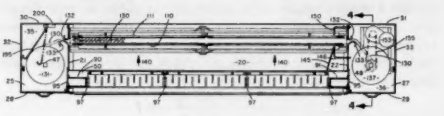
Allan W. Carr, Kirkville, and Donald C. Wellman, Marcellus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,982

Int. Cl. B03c *3/12*

U.S. Cl. 55—131 **3 Claims**

A cabinet structure is formed with a central air flow chamber and a compartment at each end of the chamber. A web of dielectric filter medium extends across the air flow chamber between a pair of spaced apart, conductive grids insulated from the cabinet. The grids extend the full width of the compartment and a positive DC potential from a power pack is applied to the upstream grid, and a like negative potential is applied from a second power pack to the other grid. An ioniz-



ing assembly is arranged upstream from the grid structure and includes ionizing wires insulated from the cabinet and connected to the positive grid. Means is operable upon a predetermined reduction in air flow through the filter medium to effect advancement of a length thereof equal to the width of the air flow chamber.

3,800,510

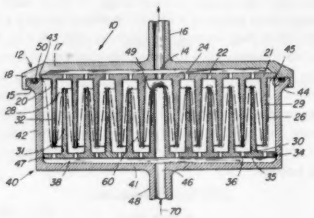
SEPARATING ASSEMBLY

Lee T. Lamond, Morris Plains, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 9, 1972, Ser. No. 251,669

Int. Cl. B01d *27/08*

U.S. Cl. 55—158 **7 Claims**



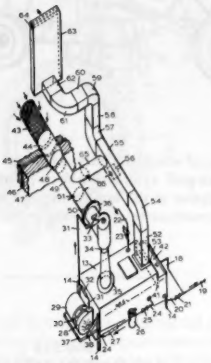
A housing assembly for a separating medium disposed between upstream and downstream conduit members. The assembly comprises a first covering means communicating with the downstream conduit member. A first manifold means is spaced upstream from the first covering means and is connected at its upstream face to a first plurality of concentric cylinders. A second plurality of concentric cylinders are disposed in the annular spaces formed by the first plurality of concentric cylinders. This second plurality of concentric cylinders is connected to the downstream side of a second manifold means disposed upstream of the first manifold means. A second covering means the bottom section of which is disposed upstream of the second manifold means encloses the assembly. The enclosed assembly is sealed by means of a sealing means disposed between the covering means and the covering housing. A separating medium is disposed in the annular spaces formed by the first and second plurality of concentric cylinders. This arrangement provides maximum surface area for separation as well as excellent support for the medium.

3,800,511

EXTENSIBLE INCINERATOR GAS SCRUBBER SYSTEM WITH STANDARD DUCTWORK

Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 45,044, June 10, 1970, abandoned. This application Mar. 9, 1973, Ser. No. 339,886
Int. Cl. B01d 47/00
U.S. Cl. 55—228 7 Claims



This invention relates to the abatement of air pollution resulting from the discharge of combustion products from refuse incinerators.

The invention includes but is not limited to the apparatus of both recirculation-type tank-mounted ejector-venturi gas scrubber systems actuated by pressurized scrubbing liquid recirculated by an integral system pump, and drain-type tank-mounted ejector-venturi gas scrubber systems actuated by pressurized water supplied from a municipal water system or other outside source.

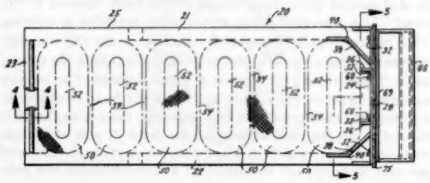
Height-adjustable gas washer units provide an extensible foundation for a standard system of inlet, bypass and discharge ductwork wherein the furnace intake of the scrubber system may be easily installed in a sheltered position adjacent the refractory furnace ceiling of apartment house incinerators having different designs and furnace heights. This extensible arrangement eliminates the need and expense for individual custom-type fit-up and shop fabrication of scrubber system ductwork as commonly practiced by installers.

3,800,512

FLEXIBLE FILTER ELEMENT

David N. Tanner, Kirkwood, Mo., assignor to Arudale Manufacturers, Inc., St. Louis, Mo.

Filed July 6, 1971, Ser. No. 159,641
Int. Cl. B01d 39/14
U.S. Cl. 55—357 8 Claims



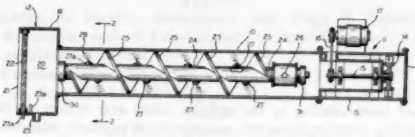
A flexible filter element comprising a thermoplastic frame and a corrugated thermoplastic filter mesh medium within the frame, the frame and mesh being of unitary construction molded as a one-piece filter element.

3,800,513

ANTI-AIR POLLUTION DEVICE

Frank S. Lappin, deceased, late of Chicago, Ill.; Thomas F. Lappin, Rt. 3, Box 809, St. Charles, Ill., and Robert W. Lappin, 10811 Stells Ct., Kensington, Md. (executors)

Continuation of Ser. No. 208,327, Dec. 15, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,510
Int. Cl. B01d 47/06
U.S. Cl. 55—238 4 Claims



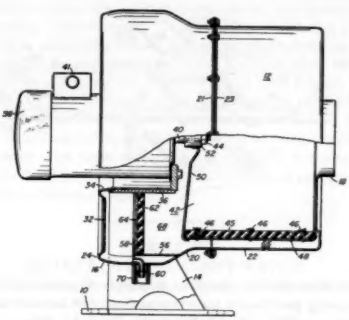
An air flow and water washing structure for polluted air. High velocity flow is produced along a spiral path defined by auger flights. Plural water washing curtains are provided between adjacent auger flights.

3,800,514

FILTER FOR REMOVING PARTICLES AND AEROSOLS FROM AIR AND OTHER GASES

Leo Avondoglio, 10 Acorn Pl., North Caldwell, N.J., and George N. Shuhan, 7 Willow St., Cranford, N.J.

Filed Apr. 12, 1971, Ser. No. 133,127
Int. Cl. B01d 33/02
U.S. Cl. 55—319 5 Claims



An air filter is described of the centrifugal impact type having a casing defining an inlet adjacent the front end of a filter drum. The casing has a bulbous rear portion extending beyond the rear of the drum which has the air outlet and is shaped to enhance the efficiency of air flow through the filter.

3,800,515

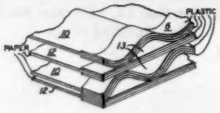
EXCHANGE PACKING ELEMENT

Gunnar C. F. Asker, and Maurice A. Hubscher, both of 18 Industrial Dr., Trenton, N.J.

Continuation-in-part of Ser. No. 768,995, Oct. 21, 1968, Pat. No. 3,664,095, and a continuation of Ser. No. 767,681, Oct. 15, 1968, abandoned. This application May 28, 1971, Ser. No. 148,218. The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. B01d 53/04
U.S. Cl. 55—387 2 Claims

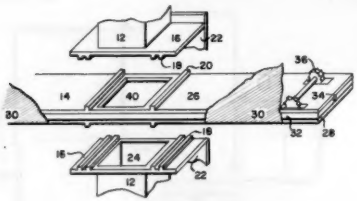
A moisture adsorbent packing is formed as a laminated cellular structure of paper in which the pores of the paper have

been filed with an inorganic moisture adsorbent substance, the packing being strengthened and reenforced using some minor



hard resin coating at the cellular inlets and outlets of the packing without, however, coating of the moisture adsorbent surfaces.

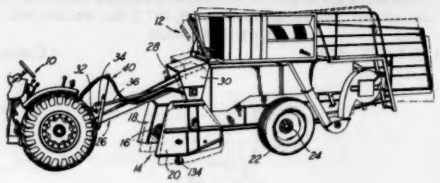
3,800,516
CARBON DIOXIDE ABSORBER
Bernard R. Paluch, 1607 Cedar Ln., Wheeling, Ill.
Filed July 6, 1971, Ser. No. 159,617
Int. Cl. B01d *27/08*
U.S. Cl. *55*—354 **5 Claims**



A carbon dioxide absorber assembly is provided in which the passing gas stream traverses at least one layer of a chemical composition which effectively removes carbon dioxide therefrom by chemical reaction or physical absorption. The layer or layers of said chemical composition is mechanically supplied to and withdrawn from the absorption zone in transverse direction to said gas stream.

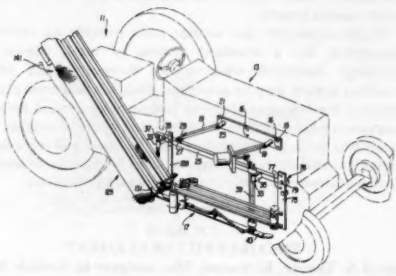
3,800,517
DRAFT TONGUE AND POWER TAKE-OFF COUPLING FOR PEANUT COMBINES
George Victor Frushour, and Marvin Lee Nafziger, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.
Filed Feb. 12, 1973, Ser. No. 331,638
Int. Cl. A01d *67/00, 89/00*
U.S. Cl. 56—208 **7 Claims**

The draft tongue of a peanut combine carries a gear box adapted to be connected to the power take-off of a tractor and is connected to the tractor drawbar in such a way that the forward end of the tongue operates in a fixed vertical position in relation to the ground. The tongue is connected to the frame of the combine by transversely aligned horizontal bushings



through one of which the output shaft of the gear box projects axially. Push-pull cylinders effect pivotal movement of the combine relative to the tongue to raise and lower the pick-up head of the combine relative to the ground surface.

3,800,518
LETTUCE HARVESTER
Primo Baggiolini, Salinas; James Edward Muscio, and Michael Silvio Franscioni, both of Gonzales, all of Calif., assignors to Agriframe, Inc., Gonzales, Calif.
Filed Oct. 20, 1971, Ser. No. 190,937
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 R **10 Claims**



Vehicle mounted apparatus for harvesting lettuce. The harvesting apparatus includes a ground engageable skid having a knife positioned for severing the lettuce head from its root. The skid gauges the cutting height of the knife relative to the ground. The harvesting apparatus also includes a sensing device having a pair of opposed rollers to sense the size and firmness of lettuce heads as the vehicle moves along the row of lettuce. These rollers are driven at ground speed. The lettuce heads pass between the rollers and when the head engaged by the rollers has the proper size and firmness, the cutting knife is actuated to cut the root supporting the head. A pair of endless conveyors on the vehicle is positioned to receive the severed head and to transport the head to a level suitable for subsequent processing.

3,800,519
Patent Not Issued For This Number

3,800,520

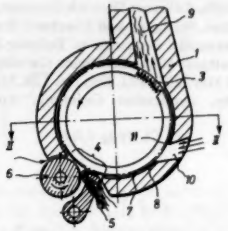
FIBER OPENING ROLL OF AN OPEN END SPINNING DEVICE

Adolf Schiltknecht, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed June 4, 1973, Ser. No. 366,525

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.91 25 Claims



The spinning roll and housing are constructed to define a small laterally extending clearance which communicates the annular space between the clothing on the roll and the inside surface of the housing with a space of higher pressure. The clearance acts as a pneumatic seal to prevent lateral outward passage of fibers from the housing while, at the same time, allowing sufficient air to pass into the housing to ensure against too large an ingress of air at the waste separation opening.

3,800,521

RINGLESS SPINNING MACHINE

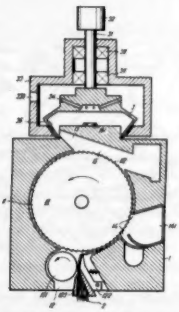
Ctibor Doudlebsky; Frantisek Jaros; Frantisek Ferkl; Antonin Cap, all of Usti nad Orlici, and Vlastislav Slavik, Jehnedi, all of Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Mar. 21, 1972, Ser. No. 236,581

Claims priority, application Czechoslovakia, Mar. 24, 1971, 2139-71

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 9 Claims



A ringless fiber spinning machine with spinning units including spinning chambers and adjacent separating devices preceding them. The inlet of the air distribution chamber for the necessary air is arranged on the spinning units and is connected with a least two of the zones of the spinning chamber which take the technological air. The distributing chamber of the such air has a case and a cover of the body of the separating device which enclose the recess in which are located the zones that get technological air. The cover is provided with holes connecting the distributing chamber with at least two of the said zones. A filter is preferably inserted into the inlet of the distributing chamber.

3,800,522

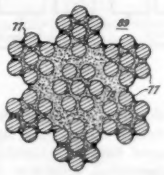
SEALED WIRE ROPE AND STRAND AND METHOD OF MAKING

Charles R. Hughes, Hellertown, and Hugh S. Graham, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 112,211, March 30, 1971, Pat. No. 3,681,911. This application Aug. 9, 1972, Ser. No. 278,414

Int. Cl. D07b *1/16*; D02g *3/36*

U.S. Cl. 57—149 27 Claims



A wire rope or strand is impregnated with a plastic foam type internal sealant to cushion the wires and strands and provide corrosion protection by (*a*) initially impregnating the strand with a foamable plastic composition, (*b*) heating the strand under "free-blowing" conditions to foam the plastic composition uniformly about the wires or strands, and (*c*) preferably finally collapsing the foam material upon the surface of the strand by means of a cold die to form a dense outer plastic jacket. The foamable plastic composition before foaming serves as a lubricant within the stranding die so that no additional stranding lubricant is required. The resulting plastic impregnated wire rope or strand has uniform low interwire foam filler densities. Alternative constructions of impregnated rope or strand can be made.

3,800,523

QUARTZ CRYSTAL WRIST WATCH

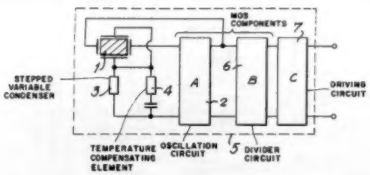
Satoshi Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,501

Claims priority, application Japan, July 27, 1970, 45-65035; Sept. 10, 1970, 45-78803

Int. Cl. G04c *3/00*; G04b *37/00*

U.S. Cl. 58—23 R 14 Claims



A quartz crystal wrist watch wherein means are provided for removably mounting along the periphery of the watch the battery power source, the oscillator and associated circuitry and an electro-mechanical converter. The electro-mechanical converter is provided with a rotor coupled to the gear train of

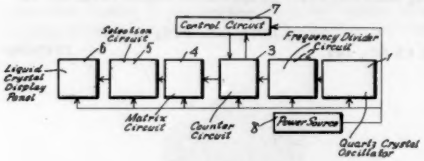
the watch positioned in the central portion thereof. The oscillator and associated circuitry are removably mounted in said watch by means of a resin case adapted to carry said oscillator and associated circuitry.

3,800,524

DIGITAL ELECTRONIC TIMEPIECE

Toshio Matsumura, 519 Tagima, Asaka-shi, Saitama-ken, and Kojiro Tanaka, 5-4, 4-chome, Nishikoiwa, Edogawa-ku, Tokyo, both of Japan

No Drawing. Filed July 27, 1971, Ser. No. 166,384
Claims priority, application Japan, July 30, 1970, 45-66347
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R 8 Claims



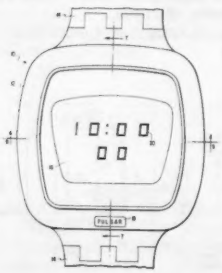
A digital electronic timepiece wherein a fundamental frequency signal is divided into a pulse signal of 1 Hz corresponding to one second. Said pulse signal is applied to a plurality of cascade connected counters, corresponding to second, minute and hour, each of said counters being connected to a matrix circuit for converting the output binary code rows from the respective counters to binary code rows corresponding to segments of the time display device, the output of each of said matrix circuits being applied to a selection circuit for actuating selected segments of each unit of the time display device in response to the output binary code from the respective matrix circuit. The display device consists of a liquid crystal display panel having a plurality of time display units each of which is divided into a plurality of segments arranged so that respective combinations of each segments of each time display units represent all digits from 0 to 9.

3,800,525

SOLID STATE WATCH WITH MAGNETIC SETTING

John M. Bergey, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Division of Ser. No. 138,557, April 29, 1971, Pat. No. 3,782,102. This application Aug. 7, 1973, Ser. No. 386,369
Int. Cl. G04b *19/30, 27/00*
U.S. Cl. 58—50 R 3 Claims



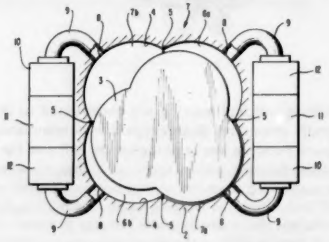
Disclosed is a solid state electronic wristwatch with no moving parts. The watch electronics are hermetically sealed in the watch case to be free of dust and moisture and the sealed components are resiliently mounted for improved shock resistance. Two setting switches and a demand switch within the casing are operated from outside the watch by permanent magnets, the demand magnet operating with a demand pushbutton. The setting magnet may be stored in the watch bracelet.

3,800,526

HOT GAS ENGINE CONSTRUCTED AS ROTARY PISTON ENGINE

Jurgen Wahnschaffe, Cologne; Dietrich Gwinner, Waiblingen; Konstantin Pattas, Stuttgart, and Eberhard Braun, Waiblingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Mar. 29, 1971, Ser. No. 128,721
Claims priority, application Germany, Apr. 3, 1970, 2015949
Int. Cl. F02g *1/04*
U.S. Cl. 60—519 22 Claims



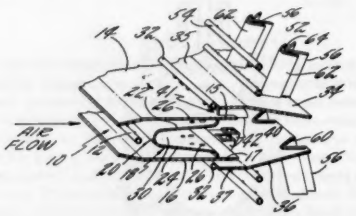
A hot gas engine in the form of a rotary piston internal combustion engine of trochoidal type of construction in which one or several pairs of working chambers of the rotary piston engine serve as warm and cold spaces of the hot gas engine which are connected with one another.

3,800,527

PILOTED FLAMEHOLDER CONSTRUCTION

Richard L. Marshall, and Dennis J. Sullivan, both of Manchester, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 741,159, June 27, 1968, abandoned. This application Mar. 18, 1971, Ser. No. 125,882
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.72 13 Claims



A piloted flameholder construction having a plurality of combustion zones to which are supplied fuel and air to support combustion therewith. Combustion gases from at least one of the combustion zones are then supplied to a plurality of flameholders thereby improving combustion efficiency and stability of the flameholders. This flameholder construction is particularly adaptable for use in a ducted fan gas turbine engine.

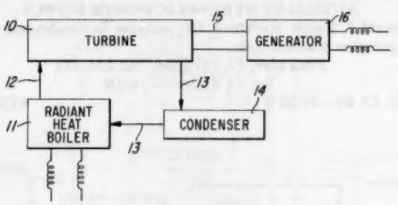
This application is reported as a Subject Invention under Government contract AF33(657)14903.

3,800,528

POWER GENERATING SYSTEM

Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.

Filed Nov. 8, 1971, Ser. No. 196,478
Int. Cl. F01k 25/10
U.S. Cl. 60—227 3 Claims



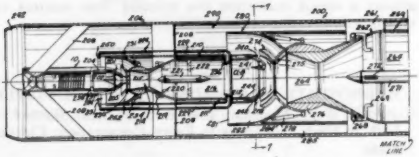
A power generating system which includes a turbine and a radiant heat boiler for supplying motive fluid to the turbine. The turbine is provided with a stator having a cylindrical bore and a cylindrical rotor provided with a substantially uniformly rough lateral surface. The inner wall of the turbine stator is provided with a continuous helical groove which serves as a passageway for the motive fluid. The lateral surface of the rotor has a relatively high drag coefficient and the rotor is actuated to a high rotational speed by the motive fluid flowing in the stator passageway and past the rotor lateral surface. The radiant heat boiler comprises a polyhedral enclosure having radiant heat reflecting surfaces on the inner walls thereof, a radiant heat source mounted within the enclosure, and a pressure vessel centrally situated within the polyhedral enclosure.

3,800,529

SELF-STARTING SERIES JET ENGINE WITH THROTTLING ASSEMBLIES

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C.

Continuation-in-part of Ser. No. 191,627, Oct. 22, 1971, Pat. No. 3,750,400. This application June 4, 1973, Ser. No. 366,561
Int. Cl. F02k 3/10
U.S. Cl. 60—241 7 Claims



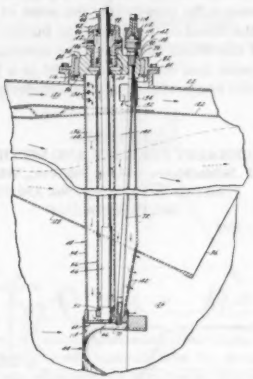
An engine including a self-starting engine compressor unit comprising a burner duct defining a converging-diverging inlet at its forward end, a converging exhaust nozzle at its rear end, and a combustion chamber therebetween; a fuel injection device for injecting fuel under pressure axially through the throat of the inlet into the combustion chamber to draw air therewith into the chamber; and preheater means for heating the chamber to a predetermined temperature. The compressor unit may include a bypass duct encircling the burner duct with an inlet opening forward of the inlet to the burner duct and a converging exhaust opening rearward of the exhaust nozzle so that air will be drawn through the bypass duct by the jet pumping action of the exhaust gases from the burner duct in combination with the exhaust opening in the bypass duct. The fuel injection device may be equipped with pressure responsive means for transferring the point of injection from forward of the throat of the inlet of the burner duct to a point rearward of the throat and within the combustion chamber. The compressor unit may be embodied in a jet engine as a start stage with intermediate and final ram-jet type stages.

3,800,530

AIR COOLED AUGMENTER IGNITER ASSEMBLY

Dudley O. Nash, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 17, 1972, Ser. No. 227,109
Int. Cl. F02c 3/04, 7/22, 7/26
U.S. Cl. 60—261 16 Claims



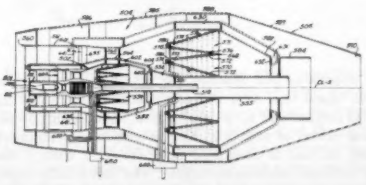
An augmenter igniter assembly for a mixed flow augmenter gas turbine engine is shown to include an airfoil-shaped, hollow housing which surrounds an electrical discharge-type igniter and provides a cooling air flowpath therearound. A high velocity, cooling air flowpath is provided in the region of the critical igniter tip, and antiflameholding air is ejected from the downstream end of the housing to locally cool this region and to reduce the wake downstream of the housing. Mounting means are shown which permit removal of the igniter and its associated electrical lead without the necessity of removing the housing from the engine casing. The mounting means also spring-loads the igniter tip into its desired position at the base of the housing and further provides means for allowing selective movement of the housing with respect to other augmenter components during augmenter operation.

3,800,531

SELF-STARTING ANNULAR JET ENGINE WITH PLURAL BURNER AND BYPASS DUCT

Thomas H. Sharpe, 502 Darr Ave., Belvedere, S.C.

Continuation-in-part of Ser. No. 191,627, Oct. 22, 1971, Pat. No. 3,750,400. This application June 4, 1973, Ser. No. 366,332
Int. Cl. F02k 3/10
U.S. Cl. 60—263 10 Claims



An engine including a self-starting engine compressor unit comprising a burner duct defining a converging-diverging inlet

at its forward end, a converging exhaust nozzle at its rear end, and a combustion chamber therebetween; a fuel injection device for injecting fuel under pressure axially through the throat of the inlet into the combustion chamber to draw air therewith into the chamber; and preheater means for heating the chamber to a predetermined temperature. The compressor unit may include a bypass duct encircling the burner duct with an inlet opening forward of the inlet to the burner duct and a converging exhaust opening rearward of the exhaust nozzle so that air will be drawn through the bypass duct by the jet pumping action of the exhaust gases from the burner duct in combination with the exhaust opening in the bypass duct. The fuel injection device may be equipped with pressure responsive means for transferring the point of injection from forward of the throat of the inlet of the burner duct to a point rearward of the throat and within the combustion chamber. The compressor unit may be embodied in a jet engine as a start stage with intermediate and final ram-jet type stages.

3,800,532

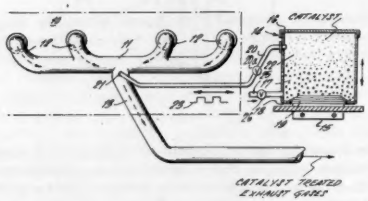
EXHAUST PURIFIER AND METHOD

Konstantin F. Schischkow, 154-41 9th Ave., Whitestone, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,594

Int. Cl. F01n *3/14*

U.S. Cl. 60—274 **11 Claims**



Catalysts in the form of very fine powder are broken from large particles of catalytic material and directed into the exhaust manifold of internal combustion engines at the region of highest temperature to purify the products of combustion.

3,800,533

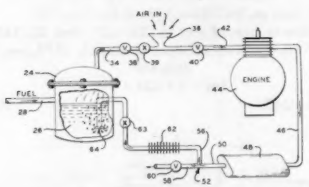
APPARATUS AND METHOD FOR REDUCING HARMFUL PRODUCTS OF COMBUSTION

Arthur Zankowski, Fayetteville, N.Y., assignor to Azapco, Inc., Fayetteville, N.Y.

Filed June 13, 1972, Ser. No. 262,253

Int. Cl. F02b *75/10;* **F02m** *25/06*

U.S. Cl. 60—274 **12 Claims**



An apparatus and method for effecting combustion of a volatile liquid fuel in a manner which significantly reduces harmful products of such combustion, such as carbon monoxide and oxides of nitrogen. The invention is particularly applicable to, and is described in connection with, a conventional internal combustion engine. The fuel is fully vaporized, and the vapors mixed with air, before being burned. The combustion gases are then oxidized without further combustion and divided by a flow-limiting orifice and branch line into two portions, one of which is released to the atmosphere, and the other returned to the system by being released through a nozzle below the surface of the liquid fuel being vaporized. The temperature of the returned gas is below the boiling range of the liquid fuel.

3,800,534

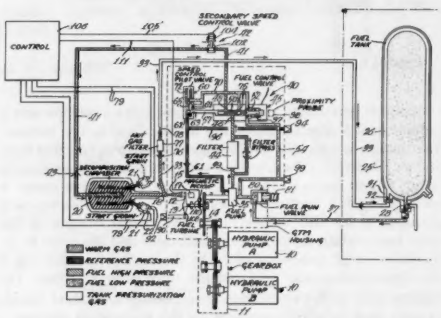
AUXILIARY HYDRAULIC POWER SUPPLY

Donald J. Kacek, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 27, 1972, Ser. No. 238,352

Int. Cl. F02c *9/08, 9/10*

U.S. Cl. 60—39.28 R **9 Claims**



An emergency hydraulic power supply for an aircraft or the like, including a hydraulic pump arranged to be driven by a turbine in turn driven by hot gas from a decomposition chamber, a fuel pump driven by the turbine for supplying fuel to the decomposition chamber, primary flow control valve means in the pump outlet for controlling fuel flow responsive to turbine speed, an ignition chamber communicable with the decomposition chamber and having a start grain for initiating turbine operation to start the fuel pump, a secondary control valve in the pump outlet, and control means for sensing turbine speed and opening the secondary valve when the turbine attains a speed indicating the start grain has about burned out, and closing the secondary valve in the event that the turbine attains a speed indicating the primary flow control valve means is inoperative to control turbine speed.

3,800,535

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Harold R. Ward, Marshall, and Edwin D. Hicks, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

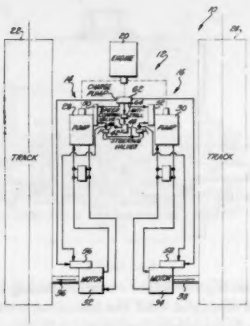
Filed Feb. 7, 1973, Ser. No. 330,423

Int. Cl. F16h *39/46*

U.S. Cl. 60—427 **7 Claims**

An improved hydrostatic transmission control system includes a speed control valve which facilitates inching or creep control by effecting a relatively small change in the output speed of a hydrostatic transmission with each increment of movement of a control rod or member during low speed operation of a vehicle. During high speed operation of the vehicle, each increment of movement of the control rod results in a relatively large change in the output speed of the hydrostatic transmission. To obtain the different changes in hydrostatic transmission output speed with equal increments of movement of the control rod, the speed control valve includes a valve spool which is biased against movement relative to the control rod by springs having different spring rates or stiffnesses. During low speed operation of the vehicle, incremental movement of the control rod relative to the valve spool compresses a relatively weak spring to provide a small in-

crease in the biasing force applied against the valve spool. However, during high speed operation of the vehicle, incremental movement of the control rod relative to the valve spool



compresses only a relatively strong spring to provide a relatively large increase in the biasing force applied against the valve spool.

3,800,536

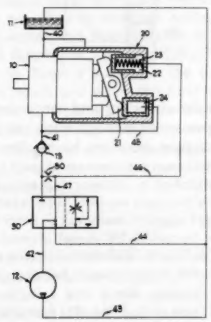
DEMAND HYDRAULIC SYSTEM WITH COOLING FLOW CIRCUIT

Wendell E. Miller, 1907 Crescent Dr., Warsaw, Ind.; Kenneth G. McMillen, deceased, late of New Castle, Ind., and Leanne S. McMillen, administratrix, Fort Wayne, Ind.

Filed July 13, 1972, Ser. No. 271,301

Int. Cl. F15b *21/04*

U.S. Cl. 60—456 **5 Claims**



In a hydraulic system having a variable displacement pump and one or more control valves, a control system is provided that achieves load-responsive control of the displacement of the pump when any control valve is actuated and further achieves a standby condition which includes low pump displacement, low standby pressure and a cooling flow path that circulates a small amount of fluid through the pump and to sump to prevent over-heating.

3,800,537

CONTROL SYSTEMS FOR OPERATING JACK UNITS

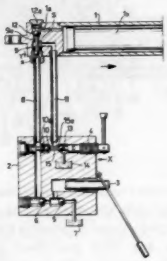
Andre Hector Denis, Garches, France, assignor to Matairco S.A., Palaiseau, France

Continuation-in-part of Ser. No. 81,048, Oct. 15, 1970, abandoned. This application Oct. 8, 1971, Ser. No. 187,778

Claims priority, application France, Oct. 10, 1970, 70.36680; Feb. 26, 1971, 71.06719; Oct. 15, 1969, 69.35304

Int. Cl. F15b *15/18, 13/42*

U.S. Cl. 60—477 **8 Claims**



The invention refers to systems for controlling (lifting, tilting and like) operational movements by means of jack devices, which are responsive to differential operation and are checked by means of pump and similar power means used in connection with vehicles, lorries, trucks and the like, which may be equipped preferably with pivotable or swingable operator cabins.

3,800,538

MASTER CYLINDERS FOR HYDRAULIC BRAKING SYSTEMS

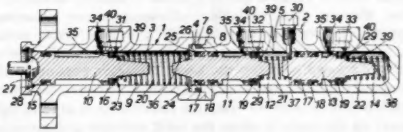
Peter Jones, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 21, 1972, Ser. No. 236,600

Claims priority, application Great Britain, Apr. 2, 1971, 8555/71

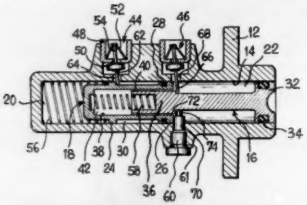
Int. Cl. F15b *7/08*

U.S. Cl. 60—562 **6 Claims**



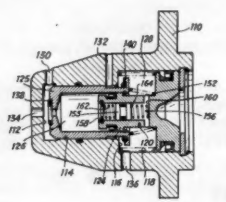
An hydraulic master cylinder of the triple type in which three separate pressure spaces are defined with a cylinder bore between adjacent ends of three pistons, and the inner end of the innermost piston and the closed end of the cylinder bore. A body defining the cylinder bore is constructed from at least two separate parts, each provided with a bore portion. At least one piston works only in the bore portion in one body part, and at least one other piston works only in the bore portion in the other body part.

3,800,539
TANDEM MASTER CYLINDER
Alain Le Marchand, Goussainville, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Mar. 8, 1973, Ser. No. 339,233
Claims priority, application France, Mar. 24, 1972, 7210370
Int. Cl. F15b 7/08
U.S. Cl. 60—562 3 Claims



A tandem master cylinder comprising a housing with a bore therein in which are slidably mounted in telescopic relationship a control piston and a floating piston of fingerstall shape. Tilting valves are also provided for permitting pressure chamber of the master cylinder to be refilled. Each tilting valve has a stem projecting into the path of one piston to be independently and directly operated thereby.

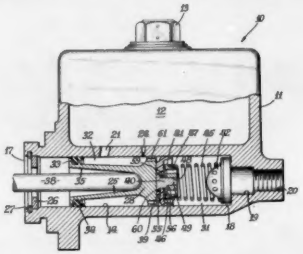
3,800,540
DOUBLE MASTER CYLINDER
Guy Papiau, Arnouville Les Gonesse, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed June 7, 1972, Ser. No. 260,605
Claims priority, application France, June 18, 1971, 71.22191
Int. Cl. F15b 7/08
U.S. Cl. 60—581 11 Claims



Double master-cylinder having a body comprising a blind stepped bore in which a stepped piston is slidably mounted to define therein two variable volume pressure chambers adapted to be connected to separate hydraulic brake actuators, a single valve member consisting of an annular sleeve slidably disposed between the small diameter portion of the piston and the bore, and a spring provided between the sleeve and the piston in order to bring the sleeve to bear in fluid-tight manner on the body to close the refill passages communicating the pressure chamber to a brake fluid reservoir.

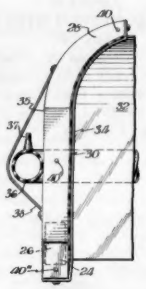
3,800,541
BRAKE MASTER CYLINDER CUP SEAL WITH VALVE
Ernest C. Sindelar, Aurora, and Duane R. Smith, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 12, 1972, Ser. No. 288,402
Int. Cl. F15b 7/08
U.S. Cl. 60—588 10 Claims

A brake master cylinder assembly having a piston cup seal equipped with a valve. The cup seal valve allows the rapid resupply of pressure fluid from the supply reservoir to the high-pressure chamber of the master cylinder at such times when there is little or no pressure in such chamber. The valve provides an unobstructed fluid flow passageway through the



cup seal to the high-pressure chamber during bleeding of the brake system equipped with the master cylinder and permits the reservoir to supply replenishment fluid to the high-pressure chamber upon a retraction stroke of the piston.

3,800,542
FLOATING BOOM
Nicholas P. Cerasari, Wilmington, Del.
Continuation-in-part of Ser. No. 25,450, April 3, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,850
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 11 Claims

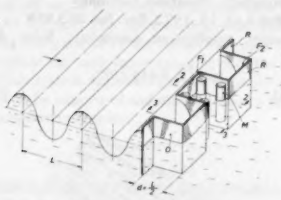


A floating boom for collecting and containing oil and floating debris in the open sea or in rough water composed of a plurality of upright support members having first weighted end and a second inwardly curved upper end; said upright support members being attached to connecting cables; a barricade wall material and a buoyant support tube which are both attached to the upright support members to form the boom. The floating boom can be towed by vessel around an oil spill or mass of floating debris to collect and contain same. The curved upper end of the support member decreases the loss of collected oil and floating debris due to action of waves in rough or open sea. The device is useful for collecting and containing oil and floating debris in the open sea, in rough water or in rivers, lakes, bays and lagoons.

3,800,543
OFFSET BREAKWATER CONFIGURATION
Walter L. Moore, Taylor Hall 212-A, Austin, Tex.
Filed June 6, 1972, Ser. No. 260,274
Int. Cl. E02b 3/06
U.S. Cl. 61—5 10 Claims

Motion of a structure subject to the forces of impinging waves is substantially decreased and the transmission of wave

motion past such structure accordingly diminished by providing the structure with a plurality of wave reflecting surfaces al-



ternatingly offset from each other by a distance approximating one-half the wavelength of the impinging waves.

3,800,544

METHOD FOR FORMING AN UNDERGROUND WALL COMPRISING A PLURALITY OF COLUMNS IN THE EARTH AND SOIL FORMATION

Wataru Nakanishi, Room 301 Ikedayama Mansion 11-1 Gotanada 4-chome, Shinagawa-ku, Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,812

Claims priority, application Japan, Nov. 30, 1970, 45-104831

Int. Cl. E02d *7/00, 29/00*

U.S. Cl. 61—35 **3 Claims**

A method for forming an underground wall comprising a plurality of columns in the earth and soil formation in which a vertically and rotationally movable hollow shaft having integral digging means and nozzle means is advanced into the earth and soil formation to a predetermined depth as it is rotated so as to form a cavity in the formation having a predetermined depth and upon the formation of the cavity, the shaft is retracted from the cavity as it is rotated and simultaneously, solidification and densification liquid agent is radially pumped through the nozzle means into the earth and soil formation so as to mix the liquid agent with the earth and soil to form a column along the shaft.

3,800,545

ROOF SUPPORT FOR USE IN MINE WORKINGS

Karl Maria Groetschel, Stolzestrasse 44, 463 Bochum, Germany

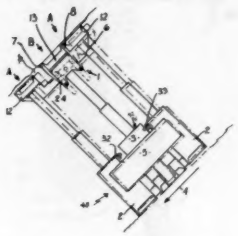
Filed Aug. 13, 1971, Ser. No. 171,703

Claims priority, application Germany, Aug. 13, 1970, 2040179

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D **18 Claims**

A roof support for use in mine workings comprising an inner unit and an outer unit, each including a base element, a plurality of hydraulic props and superstructure with the inner unit disposed in a longitudinally extending slot in the base element of the outer unit, tilt controlling members projecting upwardly into clearance spaces between the superstructure of the inner unit and parts of the superstructure of the outer unit, said tilt controlling members being pivotally mounted about horizontal longitudinally extending axes beneath the superstructure of the inner unit or outer unit, and being operable by hydrauli-



cally energised piston and cylinder assemblies to maintain said clearance spaces in being when the support is operated in a laterally inclined working.

3,800,546

MINE ROOF SUPPORT FRAMES

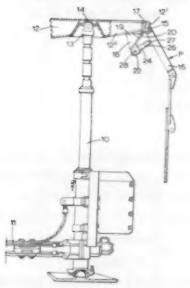
Norbert Holken, Altunen, and Hans Meya, Werne, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Apr. 14, 1972, Ser. No. 243,943

Claims priority, application Germany, Apr. 21, 1971, 2119246

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D **14 Claims**



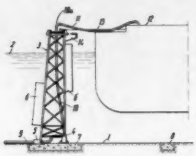
A mine roof frame with a roof girder to which a goaf screen or fender is pivotably suspended. A bracket assembly composed of a series of parallel shaped webs welded between two plates is attached to the roof girder. The lowermost plate carries a guide piece having a bore therein slidably receiving a spigot inclined in relation to the vertical and horizontal. The spigot has a support shoe which engages the fender to retain the latter in a working position. A shear pin extends through the guide piece and the spigot and the pin is designed to fracture when the fender is subjected to excessive loading to cause the spigot to slide inwardly of the guide piece to thereby allow the fender to pivot inwards to a near vertical position.

3,800,547

OFFSHORE TERMINAL WITH UNDERWATER FOUNDATION

Dipak Dutta, Dusseldorf-Rath, and Karl-Gerd Wurker, Hosel, both of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 29, 1972, Ser. No. 239,236
Int. Cl. E02b 3/20; E02d 27/52
U.S. Cl. 61—46 2 Claims



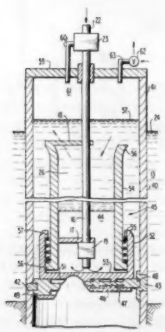
In an offshore terminal with underwater foundation and underwater pipeline leading from the shore to the foundation, a tower in which a pipe runs up, from the pipeline to connecting facilities at the top; the tower has floatation tanks and is hinged to the foundation for selective erection, whereby the top of the tower projects above the waterline, and for folding down for the tower to lie on the ocean floor. The bottom of the tower when erected, being releasably locked to the foundation.

3,800,548

WATER HAMMER PILE DRIVING WITH CONDENSABLE VAPOR RESET

Serge S. Wisotsky, Sharon, Mass., assignor to Orb, Inc., Marion, Ohio

Continuation-in-part of Ser. No. 163,422, July 16, 1971, abandoned. This application June 30, 1972, Ser. No. 267,751
Int. Cl. E02d 7/28
U.S. Cl. 61—53.5 8 Claims



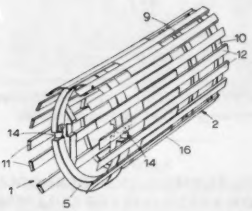
Driving long piles with a liquid ram or spear generated in an evacuated tube using a condensable vapor reset. In one embodiment, the pile itself is used as at least a portion of the working chamber for generating water hammer.

3,800,549

TUNNELLING APPARATUS

Armin Lobbe, Oberaden, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Aug. 25, 1972, Ser. No. 283,898
Claims priority, application Germany, Sept. 8, 1971, 2144862
Int. Cl. E01g 3/02
U.S. Cl. 61—85 14 Claims



A tunnelling apparatus composed of a plurality of elongate planks arranged side-by-side on a circumferential path to form a shield of circular configuration. The planks are separated into two relatively movable groups with the individual members alternately staggered so that a member of one group is disposed between two members of another group. Each group of planks is supported on three axially spaced expandible ring devices used to selectively brace the planks against the tunnel wall. Rams are provided between the rear support device of one group and a central support device of the other group so that the groups can be alternately advanced with the planks of said one group forming a forward support and the planks of said other group forming a rear support.

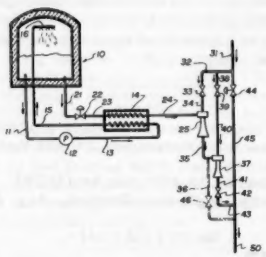
A frame rotatably supporting a drivable cutting head is slidably mounted on the support devices for the forward support and further rams are provided for advancing the frame and cutting head outwardly of the forward support.

3,800,550

SYSTEM FOR RELIQUEFYING BOIL-OFF VAPOR FROM LIQUEFIED GAS

Terry Wayne Delahunty, Plainfield, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Division of Ser. No. 203,726, Dec. 1, 1971, Pat. No. 3,740,118. This application Dec. 14, 1972, Ser. No. 315,216
Int. Cl. F17c 13/02
U.S. Cl. 62—54 12 Claims



Apparatus and processes for recondensing boil-off vapor from an insulated storage tank containing a liquefied gas, such as liquefied natural gas, so that it continues to comprise a part of the stored liquefied gas.

Boil-off vapor is recondensed by refrigeration obtained from expansion of a liquefied gas stream withdrawn from the storage tank. The expanded stream, as a vapor, can be pres-

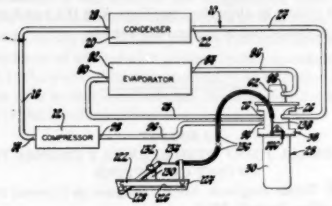
surized by feeding it to the suction side of an ejector to which a high pressure gas is fed to supply the motive force. Alternatively, a vapor stream derived from the stored liquefied gas can be fed to a venturi ejector as the motive force to pressurize boil-off vapor fed from the storage tank to the suction side of the ejector. The combined stream from the ejector, after being refrigerated by the withdrawn liquefied gas stream, is expanded to the tank vapor space to cool the tank contents. Under either system, liquefied gas stored at about atmospheric pressure can be vaporized and distributed at a pressure greater than atmospheric pressure.

3,800,551

MODULATED SUCTION THROTTLING VALVE

John Weibel, Jr., and Richard E. Widdowson, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1973, Ser. No. 339,392
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **6 Claims**



A suction throttling valve for an automatic refrigerant system including a continuously operated compressor connected to the outlet of an evaporator, including a housing having an inlet and an outlet connected between the evaporator and compressor and a valve piston for controlling refrigerant flow between the inlet and outlet in accordance with pressure conditions within the evaporator. Pressure within the evaporator and air flow temperature is preset by controlling pressure differential across the valve piston by means including a pilot control valve; a movable valve seat is positioned by manual control means to change the pressure control point at which the valve piston controls evaporator pressure to modulate air flow temperature from the evaporator.

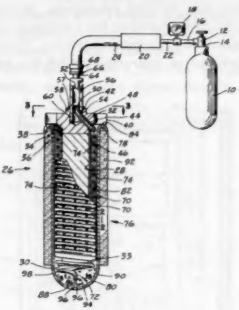
3,800,552

CRYOGENIC SURGICAL INSTRUMENT

Blase J. Sollami; Thomas J. Bulat, and Walter L. Dray, all of Davenport, Iowa, assignors to The Bendix Corporation, South Bend, Ind.

Filed Mar. 29, 1972, Ser. No. 239,088
Int. Cl. F25b *19/00*
U.S. Cl. 62—293 **10 Claims**

An apparatus for directly converting a gas into a liquid to lower the temperature of a cryogenic surgical instrument. A tube with a linear entrance and exit section is helically wound around a core. A thermal conductive member surrounds the tube between the entrance and exit sections. A gas under pressure is connected to the entrance section of the tube. A sleeve with a closed end frictionally engages and surrounds the thermal conductive member to form a closed chamber adjacent the exit section of the tube. The pressurized gas is throttled upon leaving the exit section causing the temperature in the chamber to be lowered to between −80° to −250°C causing the gas to liquefy. A path through the thermal conductive member from the chamber to the atmosphere will permit thermal energy in the throttled gas to be dissipated to the pressurized gas in the tube. The liquefied gas in the chamber will correspondingly cool the closed end of the sleeve allowing the



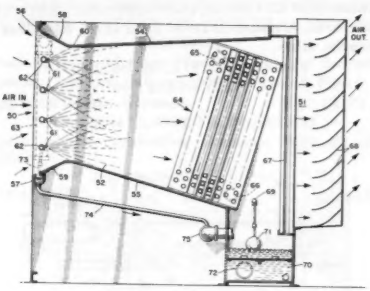
external surface thereof to be used as a cryogenic surgical probe.

3,800,553

INJECTOR TYPE INDIRECT EVAPORATIVE CONDENSERS

John Engalitcheff, Jr., Gibson Island, Md., assignor to Baltimore Airfoil Company, Inc., Jessup, Md.

Filed May 19, 1971, Ser. No. 144,854
Int. Cl. F28d *5/00*
U.S. Cl. 62—310 **6 Claims**



An indirect evaporative heat exchanger such as a condenser operating on the injection or aspiration principle in which the air is pumped solely by the injection of water which also serves to maintain wet the surface of the tubes of the condenser.

3,800,554

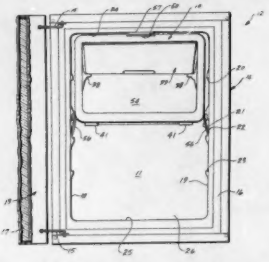
FOOD STORAGE AND COOLING APPARATUS

Karl K. Knapp, and Delbert R. Reedy, both of Los Angeles, Calif., assignors to Kardel Products Corporation, Los Angeles, Calif.

Filed May 15, 1972, Ser. No. 253,414
Int. Cl. F25d *3/12*
U.S. Cl. 62—384 **14 Claims**

This invention provides an improved food storage unit for keeping frozen and refrigerated food. The assembly includes a housing defining a cavity open from the housing along one of the sides of the cavity. Door means are releasably engageable with the housing across the one side of the cavity for closing the cavity opening. Gasket means cooperate between the door means and the housing for providing an essentially airtight seal between the door means and the housing in the closed position of the door means. Thermal insulation material is carried by

the housing and by the door means for essentially fully enclosing the cavity in the closed position of the door means. Partition means are disposed in the housing for subdividing the cavity into first and second chambers. A receptacle is associated with the first chamber for receiving a predetermined quantity of solidified carbon dioxide. Thermal insulation material is provided in association with the partition so that



the receptacle is thermally associated with the first chamber more intimately than with the second chamber. The predetermined quantity of solidified carbon dioxide, in conjunction with the thermal insulation material, is sufficient to maintain the first chamber at a temperature below 0° C. and the second chamber at a temperature above, but approaching 0° C. for a predetermined time under specified ambient temperature conditions.

3,800,555

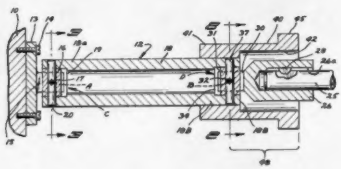
VIBRATION ATTENUATION COUPLING STRUCTURE

Harold E. G. Arneson, 2322 W. Lake of the Isles Blvd., Minneapolis, Minn.

Filed Oct. 30, 1972, Ser. No. 302,354

Int. Cl. F16d *1/00*

U.S. Cl. 64—1 V **4 Claims**



A mechanical linkage to transmit torque between a pair of machine elements to attenuate the transmission of vibration therebetween consisting of at least one torsionally rigid intermediate link separating a pair of flexible joints defining coupling points of the link, and a counterweight forming a portion of the link beyond one of the joints having a mass calibrated with respect to the mass and moment of inertia of the remainder of the link that said coupling points are made to be a conjugate pair of percussion points of the linkage.

3,800,556

POWER SHAFT COUPLING

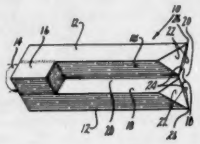
Arnold Duerksen, Salinas, Calif., assignor to Cochran Western Corporation, Salinas, Calif.

Filed Nov. 29, 1972, Ser. No. 310,207

Int. Cl. F16d *3/00*

U.S. Cl. 64—6 **18 Claims**

A power shaft coupling particularly adapted for trailing vehicles whereby a through drive shaft connection may be automatically obtained with respect to two or more trailing vehicles, or between a tractor and a trailing vehicle. The power shaft coupling includes pairs of elongate square bars forming part of complementary and mating coupler means. Guide means on the free ends of each pair of square bars serve to guide the pairs of elongate square bars of adjacent coupler means into complementary nested engagement wherein the



bars of one coupler means slide into aligned relation within outward and oppositely facing slots of the other coupler means. Each trailing vehicle can have complementary coupler means universally connected at either end of a through power shaft with means to align the couplings with the tow bars, also provided at either end of the trailing vehicle.

3,800,557

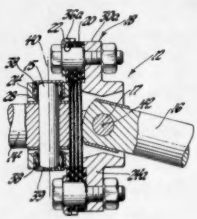
UNIVERSAL JOINT WITH FLEXIBLY CONNECTED OFFSET CROSS PINS

Michael F. Tobin, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,309

Int. Cl. F16d *3/78*

U.S. Cl. 64—13 **2 Claims**



An offset cross pin universal joint has a flexible coupling connecting the cross pins which permits lateral shifting of the cross pin axis during joint rotation.

3,800,558

TELESCOPING DRIVE SHAFT

Theo Buthe, and Hubert Geisthoff, both of Lohmar, Germany, assignors to Jean Walterscheild GmbH, Trier, Germany

Filed Apr. 10, 1972, Ser. No. 242,332

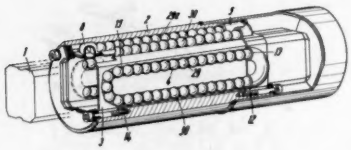
Claims priority, application Germany, Dec. 24, 1971, 2164543

Int. Cl. F16d *3/06*

U.S. Cl. 64—23.7 **10 Claims**

In a telescoping drive shaft the square end portion of an inner shaft is telescopingly positioned within the hollow end of

an outer shaft so that there is relative axial displacement therebetween. An endless series of anti-friction balls is positioned on each face of the inner shaft with each series comprising a pair of parallel straight sections of balls connected at their ends by semi-circular sections of balls. A tubular ball retainer positioned between the shafts has longitudinal slots in which the straight sections of balls are disposed. The widths of these slots are less than the diameters of the balls. Semi-circular tubular guides are positioned on the end portions of the ball retainer at the ends of the longitudinal slots to accommodate the semi-circular ball sections so that these sections of balls ride on the end portions of the ball retainers which form the bottoms of the tubular guides. Inclined surfaces are provided at the ends of the longitudinal slots to define transitions for the balls as they pass between the slots and the bottom surfaces of the tubular guides.



3,800,559

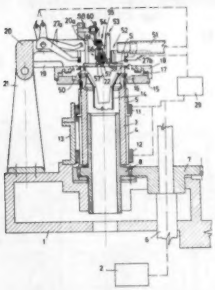
METHOD AND APPARATUS FOR CLOSING THE TOE OF STOCKINGS OR STOCKING TIGHTS

Josef Fecker, Freudenstadt, Wurttemberg, Germany, assignor to Texpatent GmbH (S.a.r.l.), Fribourg, Germany

Filed Apr. 17, 1969, Ser. No. 817,087

Int. Cl. D04b *9/16, 9/54, 9/56, 15/44*

U.S. Cl. 66—9 R **43 Claims**



A method and an apparatus for closing the toe of a stocking, wherein a closing thread is laid or knitted into the toe end of a tubular mesh, which closing thread passes at least once around the entire periphery of the mesh. The mesh is cast off the needles of a circular knitting machine and the closing thread is then pulled or partially drawn out of the mesh, causing the mesh to be constricted so as to close the toe thereof. The closing thread is then secured, as by being knotted, to prevent same from being pulled back into the mesh.

3,800,560

MACHINE FOR AND METHOD OF KNITTING STOCKING WITH CLOSED TOE

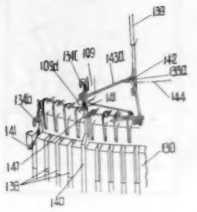
Philip Michael Hanney, and Thomas Raymond Staniforth, both of Leicester, England, assignors to The Bentley Engineering Company Limited, by said Staniforth

Filed Oct. 26, 1971, Ser. No. 192,206

Claims priority, application Great Britain, Dec. 2, 1970, 57198/70

Int. Cl. D04b *9/10, 9/56, 15/02*

U.S. Cl. 66—14 **16 Claims**



Circular knitting method and machine in which tubular knitted fabric is closed by loop transfer from needle to needle through the remaining loops and locked by knitting, preferably preceded by wale reduction by loop transfer.

3,800,561

CAM RACE CONSTRUCTION FOR KNITTING MACHINES, PARTICULARLY CIRCULAR KNITTING MACHINES

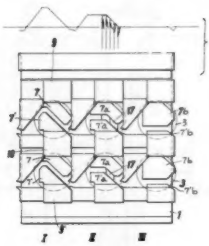
Hermann Beuter, and Alfred Planck, Jr., both of Rottenburg, Germany, assignors to Fouguet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed June 12, 1972, Ser. No. 261,693

Claims priority, application Germany, June 21, 1971, 2130585

Int. Cl. D04b *15/32, 9/06*

U.S. Cl. 66—57 **9 Claims**



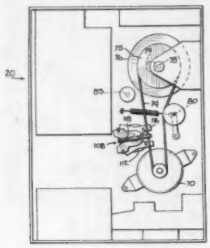
The cam race block of the knitting machine, which may be in segments, is formed with an opening extending from the front (for the cylinder) or the top (for the dial) towards the interior of the cam race block where the cam race path is formed; insert elements shaped to fit into the opening have parts of the cam race path formed thereon, by separate elements, or cut in the inside, the inserts and the openings being mutually fitted so that the inserts fit into the cam race path, for selective placement, the inserts being cut selectively to provide needle path controls for pass or idle, tuck, knit, or transfer positions. The inserts are externally accessible from the machine and removable from the outside.

3,800,562

BRAKE SYSTEM FOR BATTERY OPERATED RECORDER

John Frank Castagna, Brooklyn, N.Y., assignor to Optasound Corporation, New York, N.Y.

Division of Ser. No. 181,313, Sept. 17, 1971, abandoned. This application July 27, 1972, Ser. No. 275,737
Int. Cl. F16d 67/00; G03b 31/00
U.S. Cl. 188—161 13 Claims



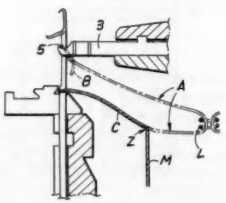
A brake system is disclosed for use with a battery operated recorder, namely a tape recorder. The brake system is able to immediately terminate movement of the tape upon release of a control switch. The brake system is particularly useful in a system for synchronizing the recording of visual images on film and sound on tape.

3,800,563

METHOD OF KNITTING CLOSED TOE HOSIERY

Giorgio Billi, Firenze, Italy, assignor to G. Billi & C. S.p.A., Firenze, Italy

Division of Ser. No. 820,088, April 29, 1969, Pat. No. 3,721,111. This application July 22, 1971, Ser. No. 165,239
Claims priority, application Italy, May 3, 1968, 4547/68
Int. Cl. D04b 9/56, 9/54
U.S. Cl. 66—95 1 Claim



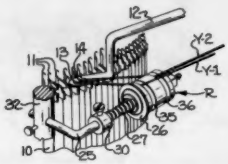
A closed toe for a circularly knit hose made upon the machine making the hose and comprising a deformed two-ply closed tubular welt structure wherein the circular seam joining the plies of the welt together is located in the outer ply of the welt between the ends thereof whereby the seam and the deformation of the welt are located on the sole side of the toe portion of the hose. The method of making the aforesaid closed toe construction by knitting a pair of nested separate tubular sections of fabric of unequal lengths as extension of the tubular foot of the hose and of then joining together the terminal portions of the tubular fabric extensions.

3,800,564

YARN PLATING METHOD AND APPARATUS FOR CIRCULAR KNITTING MACHINES

Theodore R. Carswell, Drexel, N.C., assignor to Pilot Research Corporation, Valese, N.C.

Continuation-in-part of Ser. No. 89,565, Nov. 16, 1970, abandoned. This application Oct. 13, 1971, Ser. No. 188,808
Int. Cl. D04b 9/34
U.S. Cl. 66—136 12 Claims



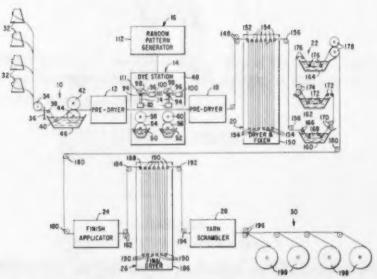
The yarn feed device is adapted to simultaneously feed elastic and non-elastic yarns to the needles of the knitting machine and at predetermined ratios relative to each other. A yarn feed roller is drivingly rotated by the non-elastic yarn as the yarn is consumed by the needles in forming the stitch loops of a knit fabric. The elastic yarn is in engagement with the roller and is fed to the knitting machine needles at a predetermined ratio, relative to the non-elastic yarn. Three different types of yarn feed rollers are disclosed, each being provided with yarn receiving grooves which may be of different diameters so that the yarns are fed at different ratios or under different degrees of tension.

3,800,565

CONTINUOUS YARN DYEING MACHINE

Daniel L. Worth, Chattanooga, Tenn., and Phillip F. Eiland, Reading, Pa., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 49,064, June 23, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 285,409
Int. Cl. D06c 1/00
U.S. Cl. 68—5 D 8 Claims



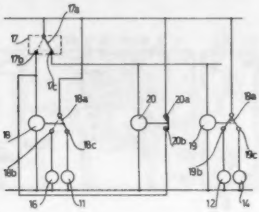
This disclosure relates to an apparatus and method of dyeing yarn in a continuous manner. More specifically, the disclosure is directed to the continuous dyeing of bulk yarn in a random fashion with substantially no pattern repeats and means also being provided for retaining the bulk in the dyed yarn during the continuous process.

3,800,566

DRY CLEANING MACHINE

Guido Zucchini, Castelmaggiore, Italy, assignor to Artigiani Meccanici Associati Societa di Fatto Castelmaggiore, Bologna, Italy

Filed June 30, 1972, Ser. No. 268,138
Claims priority, application Italy, July 2, 1971, 3464/70
Int. Cl. D06f *33/02, 43/08*
U.S. Cl. 68—12 R 3 Claims



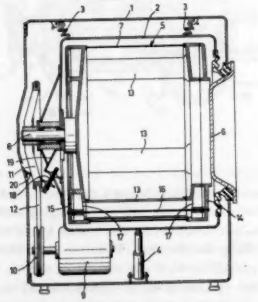
A dry cleaning machine comprises a main washing tank, a pair of solvent tanks for storing solvent connected to the washing tank and a continuous-action still and a condenser connected in series between the pair of solvent tanks. Electromechanical devices control the flow of air into and out of the main washing tank and control the circulation of solvent through the machine as a function of specific machine operating parameters to effectively prevent the loss of any solvent to the atmosphere.

3,800,567

WASHING AND SPIN-DRYING MACHINE WITH AUXILIARY MASS

Jan Stelwagen, and Huibert Van Loon, both of Emmasingel, Eindhoven, Netherlands

Filed Sept. 11, 1972, Ser. No. 287,969
Claims priority, application Netherlands, Sept. 18, 1971, 7112863
Int. Cl. D06f *37/22*
U.S. Cl. 68—23.2 2 Claims



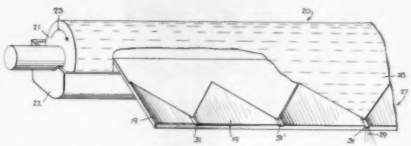
Washing and spin-drying machine having a tub in which a rotatable drum is mounted and an auxiliary mass which disposed at the end of a lever which is connected to the machine frame and to the tub.

3,800,568

APPARATUS FOR DISPENSING LIQUIDS, PARTICULARLY DYES

Nassir Takriti; Kurt Quoos; Ferdinand Leifeld, all of Krefeld, and Valentin Appenzeller, Kem Pen/Niederrhein, all of Germany, assignors to Textilausruestungs-Gesellschaft Schroers & Co., Krefeld, Germany

Division of Ser. No. 831,297, June 9, 1969, Pat. No. 3,683,649.
This application June 23, 1972, Ser. No. 265,465
Claims priority, application Germany, June 15, 1968, 1760657
Int. Cl. B05b *13/04;* B05c *5/00*
U.S. Cl. 68—205 R 6 Claims



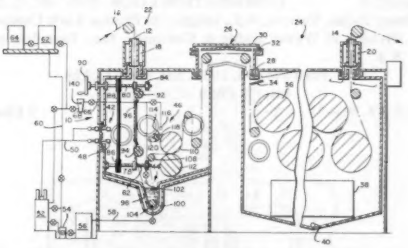
Apparatus for dispensing liquid such as for the dyeing of textiles in which a rotatable roller extends longitudinally in a trough-containing liquid, the roller being so positioned that its lower periphery immerses in the liquid in the trough. A blade is inclined toward the roller, extends longitudinally with respect thereto and has an upper edge slidably engaging the roller. The lower portion of the blade is provided with means including open-topped trough-like nozzles having rounded terminating portions for diverting liquid down the blade to form a row of interspaced low-speed liquid jets.

3,800,569

APPARATUS FOR APPLYING LIQUID TO A RUNNING WEB

Harold R. Wilcox, Maynard, Mass., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Division of Ser. No. 141,304, May 7, 1971, Pat. No. 3,701,269.
This application Oct. 30, 1972, Ser. No. 302,288
Int. Cl. B05b *13/02*
U.S. Cl. 68—205 R 1 Claim



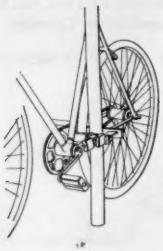
One or more liquids may be applied to a running textile web in flat tubular or open width form by three different cooperative and integrated systems. A drying chamber is associated with the apparatus for recovering solvent which may be included in certain liquid chemicals. The chemical applicating apparatus includes spray nozzles spaced transversely adjacent the path of travel of the web for spraying chemicals on the moving web. Guiding means are provided for selectively positioning the web with respect to the nozzles for optimum spraying position. A padding tank is also provided for passing the web directly through a bath of the chemical and a metering system including an applicator roll and an adjustable blade in different configurations is provided for applying precisely controlled amounts of chemicals to the web.

3,800,570

LOCKING MECHANISM

Stanley D. Kaplan, 54 Lee St., Cambridge, Mass.

Filed Apr. 6, 1972, Ser. No. 241,683
Int. Cl. E05b 73/00, 67/38
U.S. Cl. 70—18 6 Claims



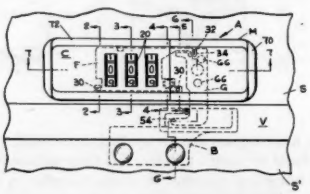
A U-shaped shackle, preferably of hardened steel, is provided with a movable bolt adapted to extend between the legs of the shackle and lock therewith by means of a padlock. The ends of the legs are formed with slot openings in register with one another to receive the bolt. The bolt is formed with a shoulder at one end and an opening near the opposite end. The padlock hasp is passed through the opening at the opposite end of the bolt to lock the bolt across the legs of the shackle. Rigid walls are formed about the slot on the end of one leg of the shackle to partially enclose the end of the bolt which is formed with the opening to protect the padlock against being forced, cut or otherwise tampered with. The lock is useful particularly as an anti-theft device for bicycles.

3,800,571

COMBINATION LOCK

Henry Heine, Vernon, N.J., assignor to Preston Lock Company Division of Walter Kidde & Company, Inc., East Paterson, N.J.

Filed Feb. 16, 1973, Ser. No. 333,124
Int. Cl. E05b 37/02, 65/52
U.S. Cl. 70—71 9 Claims



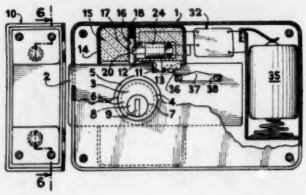
A combination lock which employs a plurality of dials and respective sleeve means for each dial has a pivotally mounted bolt member related to the sleeve means for interlocking engagement with a latch member. The latch member, which is formed to engage a hasp, is spaced longitudinally from the dials and is mounted for movement in a single plane.

3,800,572

SAFETY DEVICE FOR A LOCK AND A LOCK INCLUDING SAID DEVICE

Bernard Beharelle, 183, Avenue Pierre Brossolette, 92 Montrouge, France

Filed Feb. 28, 1973, Ser. No. 336,814
Claims priority, application France, Mar. 3, 1972, 7207553
Int. Cl. E05b 63/00
U.S. Cl. 70—134 19 Claims



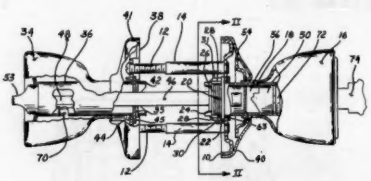
For a lock comprising a bolt, a keeper in which the bolt is engageable in the closing position of the lock and means for shifting the bolt. The safety device comprises delayed-action means for blocking the bolt and precluding displacement of the bolt in the direction for opening the lock a predetermined interval of time after the bolt has been displaced an initial partial distance in the direction for opening the lock by the shifting means.

3,800,573

FREE INSIDE KNOB LOCK SET

John H. Babb, Jr., and Orville C. Maurits, both of Grand Rapids, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed May 11, 1972, Ser. No. 252,446
Int. Cl. E05b 13/08, 13/10
U.S. Cl. 70—217 5 Claims



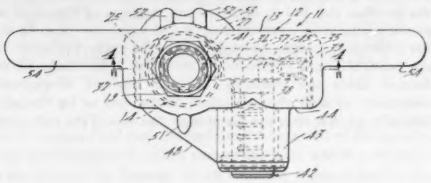
Locking mechanism including a cam-actuated locking plate shiftable between engaging and nonengaging locking positions to lock an outside knob while the inside knob remains free to open the latching mechanism. When in its unlocked position, the plate is rotatable with the outside knob so that the door latch may be operated in a conventional manner. When shifted to its locked position, the plate fixed to the knob is moved by a cam mechanism into an engaging position with supporting structure such that the knob cannot be turned. The inside knob, however, remains free and operates the conventional latching mechanism without regard to the position of the locking plate.

3,800,574

SPARE WHEEL LOCK ASSEMBLY

Robert V. Reid, Roseville, and Charles E. White, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1973, Ser. No. 341,648
Int. Cl. F16b 41/00
U.S. Cl. 70—231 10 Claims



A spare wheel lock assembly adapted to be locked or unlocked with a key. The lock assembly functions as a conventional wing nut to hold a spare wheel on a hold-down bolt secured to the floor or a panel of a compartment. When in unlocked condition, the lock assembly can be installed by rotation in threaded engagement with the hold-down bolt. When in locked condition on the hold-down bolt, the lock assembly free wheels about the hold-down bolt without axial movement.

3,800,575

HANDLEBAR BICYCLE LOCK

Louis D. Perret, III, 87 River Rd. Box 417, Destrehan, La.

Filed Dec. 7, 1972, Ser. No. 313,066
Int. Cl. B62h 5/04, 5/16
U.S. Cl. 70—233 1 Claim

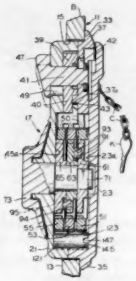
A handlebar bicycle lock of the type embodying a resilient cable which is anchored at one end within the handlebar, yet has its free end supported within the handlebar when not in use. The free end of the cable is extensible from one open end of the handlebar so as to encircle a portion of the wheels and frame of the bike, being secured thereto by means of a padlock. The cable and padlock thus lock the handlebars and wheels during non-use. The anchored end of the cable is locked within the handlebar by means of the engagement of an enlarged tip with an expansible ring element supported in the handlebar and the free end of the handlebar includes an enlarged outer stop which is engageable with the padlock hasp in locking position.

3,800,576

COMBINATION LOCK

Iral D. Barrett, Salem, and Daniel L. Spoor, Scio, both of Oreg., assignors to Supra Products, Inc., Salem, Oreg.

Filed Nov. 8, 1972, Ser. No. 304,619
Int. Cl. E05b 37/08
U.S. Cl. 70—302 7 Claims



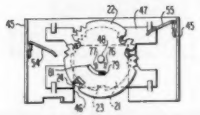
A combination lock having shiftable drive lugs to facilitate full use of combination rings. The rings are floatingly mounted within a housing and retained in place by confining walls. A detent brake holds the rings against inadvertent sympathetic movement that is urged by their frictional contact.

3,800,577

COMBINATION LOCK

Christian Albert Norremark, Sdr. Hostrup, DK-6200 Abenra, Denmark

Filed May 9, 1972, Ser. No. 251,782
Int. Cl. E05b 37/00
U.S. Cl. 70—313 3 Claims

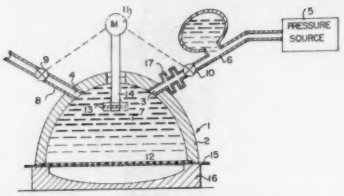


A combination lock has a pair of toothed tumbler disks which are rotatably mounted on a slide. The slide is displaceable to bring the disks alternatively toward a pair of detents. Engagement between teeth of a disk and a detent produces rotation of the engaged disk. The disks have a pair of notches which, when aligned, allow the lock to be opened. The notches are initially offset, with a first of the disks being rotated relative to the second disk during prescribed maneuvering of the slide to bring about an alignment of the notches. The tip diameter of the second disk is smaller than the root diameter of the second disk. At selected points along the second disk the teeth have sunken recesses such that a detent entering such recess, in response to an incorrect manuevering of the slide, will engage the teeth of the second disk and rotate the second disk from its initial position. This eliminates all chances of the notches becoming properly aligned for unlocking.

3,800,578
SONIC STYLIZING APPARATUS

James Norton Brennan, and Americus Mitchell, both of Chicago, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 1, 1972, Ser. No. 258,597
Int. Cl. B21d *26/06*
U.S. Cl. 72—56 **12 Claims**

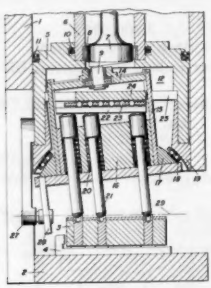


Our disclosure relates to an apparatus for the vibratory forming of a sheet of material into a die. More specifically, this invention relates to a new and improved forming of metal sheet material by ultrasonic means.

3,800,579
WOBBLE RIVETING MACHINE

Fritz Breiter, Langendorf, Switzerland, assignor to Langendorf Watch Company, Langendorf, Switzerland

Filed Feb. 3, 1972, Ser. No. 223,133
Claims priority, application Switzerland, Feb. 24, 1971, 2683/71
Int. Cl. B21b *1/00, 3/00, 11/00*
U.S. Cl. 72—67 **7 Claims**



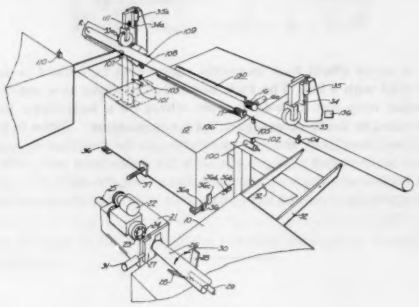
A wobble riveting machine in the housing or stand of which there is arranged a lengthwise movably mounted guide body. A driving shaft having an eccentric mechanism is mounted in such guide body. According to the invention the guide body possesses a spherically constructed cradle or rocker. A wobble body member which can be pivoted to all sides by the eccentric mechanism is mounted in the cradle. At least one rivet tool or set is guided for lengthwise movement at the wobble body member, the latter being supported at the guide body.

3,800,580
THREAD ROLLING APPARATUS

Clarence P. Lewis, Carlisle, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Jan. 8, 1973, Ser. No. 321,868
Int. Cl. B21b *15/00*
U.S. Cl. 72—68 **18 Claims**

The application discloses an apparatus for rolling helical threads into rod or tube. The apparatus includes a stock table with which is associated a beveler to bevel the end of the rod to facilitate feeding into the thread rolls, a feed-in table, a thread roll table, a feed-out table, and a stock table onto which the threaded rod is discharged. The feed tables both in and out are substantially identical and comprise parallel rows of balls or rollers on which the rod rests, the banks of balls being movable in unison at a 45° angle to the vertical downwardly, outwardly, and away from the thread roll table. With the banks of balls in the lowermost position, the tables are arranged for the largest size rod to be threaded and when the banks are in the uppermost position, they are arranged for the smallest size rod to be threaded. A series of flip stops are provided for each nominal size of rod to be handled, so that the tables may be set automatically to the correct position for the particular size of rod to be threaded. The banks on the feed-in table are movable a small amount in opposite directions to shift the centerline of the rod to be threaded laterally, so that after the die plunge, the axis of the rod on the



feed-in table will be colinear with the axis of the rod on the feed-out table.

The thread roll setup comprises one roll with a fixed axis and another roll arranged for movement toward and away from the fixed roll for die plunge. During die plunge the axis of the rod being threaded is shifted slightly by opposite movement of the banks on the feed-in table, automatically, to compensate for the plunge. The thread roll table is arranged for movement transversely of the axis of the rod for the accomodation of different sizes of rod to be threaded. Associated with both the feed-in and feed-out tables is a power driven feed roller which may be adjusted as to its angle to the axis of the rod and which may be raised and lowered to accommodate different diameters of rod. The feed rolls are synchronized with rod rotation, axle direction feed, and the helix angle setting, thereby avoiding excessive axle thrust which would either break the die threads or produce a product outside tolerances.

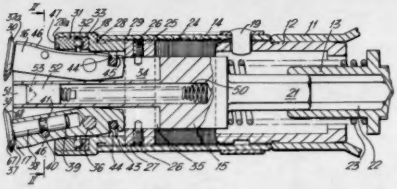
3,800,581
FASTENER

Frederick Arthur Summerlin, St. Albans, and Harvey Philip Jeal, Stevenage, both of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Aug. 24, 1972, Ser. No. 283,419
Claims priority, application Great Britain, Aug. 24, 1971, 39676/71
Int. Cl. B25b *27/00*
U.S. Cl. 72—71 **12 Claims**

A tool and a method for cropping off a portion of a fastener stem which projects from the body of a fastener and for simultaneously locking the remaining part of the stem in the body of the fastener is disclosed. The tool comprises a pair of cutting wheels each of which is mounted for rotation about its own axis and is bevelled to a peripheral cutting edge. The two cutting wheels are movable towards and away from each other

and in an orbit about an axis passing between them. A fastener stem is cropped by inserting it along the axis between the cutting wheels and moving the wheels in orbit around the stem while forcing them towards each other. The bevelled edges of the cutting wheels cut into the stem so that the projecting portion is cropped off and also deform the material of the stem to form an enlargement of the part of the stem which is retained in the body of the fastener which locks the retained part in the fastener body. The tool has an ejector for expelling the cropped-off portion of the stem.



3,800,582

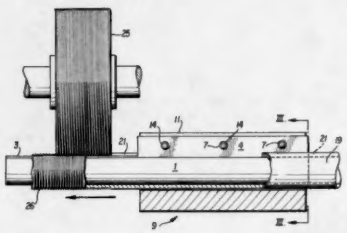
DEFORMING A SLOTTED TUBE

Raymond Gerald Sartori, Rockville, Md., assignor to Liskey Aluminum, Inc., Glen Burnie, Md.

Filed Mar. 23, 1972, Ser. No. 237,485

Int. Cl. B21h *3/04, 9/00*

U.S. Cl. 72—78 **10 Claims**



This invention is concerned with a work holder for a slotted tube to be deformed, preferably by moving the tube to a deforming work station and preventing the tube from rotating. The tube is fitted with an internal mandrel which is held in a fixed position by a vice. The mandrel has an upright blade that extends through the keyway of the slotted tube so that the tube can be slid along the mandrel relative to the deforming work station. In one method, continuous lengths of hollow pipes, tubes and the like can be threaded or otherwise externally deformed by supporting the workpiece internally with the mandrel. By changing the mandrel size, tubes of varying diameter can be accommodated. The deformed workpiece can be used in a variety of applications, one of which is a threaded hollow tube or stem member that has a cap welded to the rim of the tube to provide a pedestal cap of improved strength.

3,800,583

CUP TRANSFER APPARATUS AND SYSTEM FOR DRAWING AND IRONING

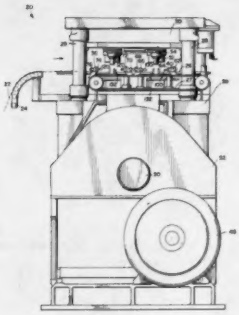
Stanley J. Miller, Crystal Lake, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Aug. 4, 1972, Ser. No. 278,031

Int. Cl. B21d *43/06*

U.S. Cl. 72—349 **29 Claims**

A system for drawing and ironing can bodies, particularly steel can bodies, characterized by a single stroke press having an equal number of drawing and re-draw stations in combination with a novel means to transfer cups from drawing to redrawing stations, and a separate ironing press having separate stations to correspond to each re-drawing station. The apparatus for transferring cups across a sheet metal web from blank-draw stations to re-draw stations beyond the edge of the web includes movably mounted first members adjacent the re-



draw stations and the surface over which the web passes, extension members connected to the movable first members, gripping members connected to the extension members adjacent the stations, means to move the first members and thus the gripping members across the web and over the edge thereof, and means to actuate the gripping members to grip cups at blank-draw stations and release them at redraw stations.

3,800,584

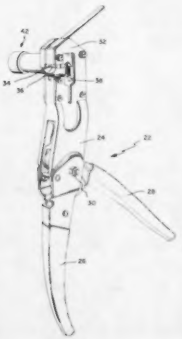
ELECTRICAL CONNECTION HAVING RADIAL CRIMP AND AXIAL INDENTATION

Joseph R. Edwards, Sr., Largo, and James Albert Kloth, St. Petersburg, both of Fla., assignors to AMP Corporation, Harrisburg, Pa.

Filed Aug. 23, 1972, Ser. No. 283,142

Int. Cl. B21d *37/12*

U.S. Cl. 72—410 **6 Claims**



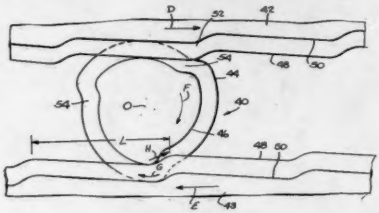
Wire is connected to ferrule by radially crimping the ferrule onto the wire and, while the ferrule is held in the crimping device, axially indenting the wire and staking it against the internal wall of the ferrule.

3,800,585

DIE FOR FORMING LOBED THREADS

Leon Simons, New City, N.Y.; Samuel H. Lessig, Jr., Statesville, N.C., and Richard H. Corrette, Olmstead Falls, Ohio, assignors to NL Industries Inc., New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,845
Int. Cl. B21h *3/06*
U.S. Cl. 72—469 **12 Claims**



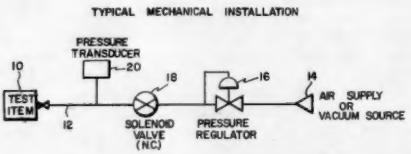
Thread rolling die having grooves and ridges which are undulated with respect to the place of die movement with the spacing of the undulations in the direction of die movement being related mathematically to the pitch and major diameters of a screw formed by the die.

3,800,586

LEAK TESTING APPARATUS

Leroy C. Delatorre, Spring; William J. Rapson, Jr., and Paul H. Lemson, both of Houston, all of Tex., assignors to Uson Corporation, Houston, Tex.

Filed Apr. 24, 1972, Ser. No. 246,633
Int. Cl. G01m *3/02*
U.S. Cl. 73—49.2 **4 Claims**



An apparatus for testing for leaks in a test item by subjecting the item to a test pressure, closing a valve to contain the pressure in the test item, and measuring the change in the pressure in which the apparatus measures the initial pressure in the test item after the item is closed and compares the change in pressure relative to the initial pressure value thereby determining the extent of any leak in the test item. The test item may be subjected to a pressurized gas or vacuum. In subjecting the test item to a positive pressurized gas, an electrical signal is generated providing a compensating exponential signal of equal and opposite value to the dissipation of the adiabatic heat as the pressurized gas in the test item cools after closing.

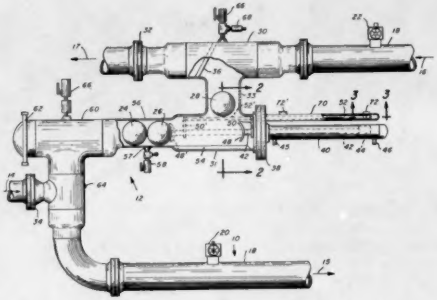
3,800,587

THREE-SPHERE PROVER INTERCHANGE

William D. Clinton, Tulsa, Okla., assignor to Signet Controls, Inc., Tulsa, Okla.

Filed Sept. 29, 1972, Ser. No. 293,445
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 **6 Claims**

This invention describes improvements in the conventional three sphere type meter prover systems. The improvements lie first in the use of a piston to force the prover spheres through the squeeze tube of the interchange and the provision of means attached to the piston rod to support the spheres when the piston rod is extended, and to prevent the spheres from accidentally dropping in back of the push plate. A second improvement is in the use of indicator means to indicate the position of the piston rod and the push plate which is used to force the spheres through the squeeze tube of the interchange.

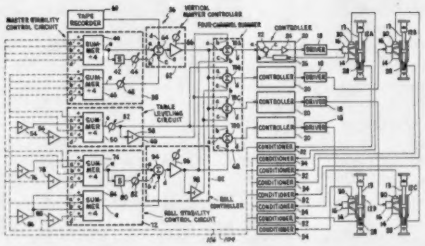


3,800,588

MULTIPLE AXIS CONTROL SYSTEM FOR VIBRATION TEST APPARATUS

Rodney L. Larson, St. Louis Park, and Niel R. Petersen, Hopkins, both of Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed Apr. 30, 1971, Ser. No. 139,081
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.6 **10 Claims**



Four vertically disposed hydraulic actuators act at spaced drive points on the underside of a rigid structure so as to impart vibratory motion thereto. The system herein disclosed takes signals representing displacement and load, and provides individual control signals for each actuator so that the actuators all work together to produce the desired motion called for by a program or command signal. In addition to correcting for vertical motion errors, the system also specifically corrects for roll errors. Correction for errors in the horizontal direction and also errors with respect to pitch are also contemplated.

3,800,589

CIRCUIT ARRANGEMENT FOR ADJUSTING THE POSITION OF A MOVABLE MEMBER

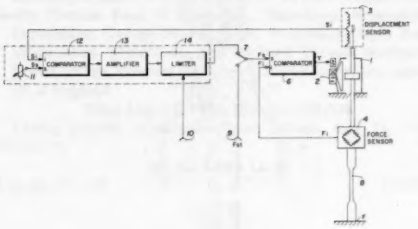
Carl Martin Wawra, Bensheim-Auerbach, and Ivan Chudey, Ober-Ramstadt, both of Germany, assignors to Finona Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Mar. 27, 1972, Ser. No. 238,579

Claims priority, application Germany, Mar. 20, 1972, 2213436

Int. Cl. G01n *3/00*

U.S. Cl. 73—90 **5 Claims**



The present circuit arrangement for adjusting a movable member, for example, for controlling the movement of a chucking head in a hydraulically driven material testing apparatus, comprises two serially arranged comparing stages in which actual and rated values are compared, whereby the output value of the first comparing stage is supplied as a rated value to one input of the next comparing stage the output of which regulates an adjustment control member such as a servo value whereby the movement of the movable member is stopped in response to a second actual value reaching or exceeding a second adjustable rated value.

3,800,590

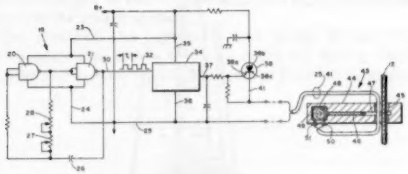
DETACHMENT APPARATUS FOR BALLOON BORNE EQUIPMENT

Theodore Arken, Sunnyvale, and Lawrence E. Mallery, San Jose, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Dec. 26, 1972, Ser. No. 318,081

Int. Cl. G01w *1/08*

U.S. Cl. 73—170 R **2 Claims**



Balloon borne temperature sensing equipment is detached from a balloon after a predetermined flight interval by a guillotine which severs the support cords in response to a signal from an electronic timer. The timer comprises a multivibrator having an adjustable period which feeds a multistage counter, the output of which is connected to the control terminal of an electronic switch. The guillotine is connected to the output of the switch and is detonated when the switch is operated to sever the support cord as well as the electrical connection to the switch.

3,800,591

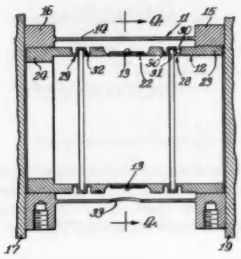
HOLLOW REACTION TORQUEMETER

Richard S. Tveter, Barrington, Ill., assignor to S. Himmelstein and Company, Elk Grove Village, Ill.

Filed Mar. 27, 1972, Ser. No. 238,239

Int. Cl. G01l *5/10*

U.S. Cl. 73—136 A **8 Claims**



A hollow reaction torquemeter for use in measuring or gauging a torque. The torquemeter includes a strain gauge carried on a torque measuring tube coaxially disposed within a tubular torque transmitting member with the torque portion transmitted through the torque measuring tube being less than the torque transmitted through the torque transmitting member. The torque transmitting member effectively comprises a sheath surrounding the torque measuring tube and provides a high polar moment of inertia for desired control of the torque transmitting characteristics while yet permitting the torque transmitting member to comprise a thin walled, relatively low cost tube.

3,800,592

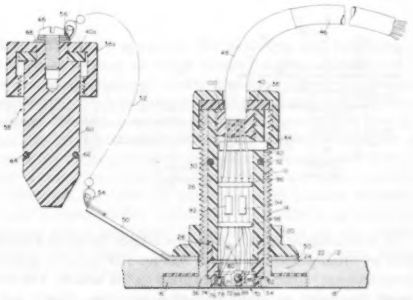
FLOWMETER

John J. Jones, Jr., Scituate, Mass., assignor to J. H. Westerbeke Corporation, Boston, Mass.

Filed Jan. 13, 1972, Ser. No. 217,622

Int. Cl. G01c *21/10*

U.S. Cl. 73—181 **1 Claim**



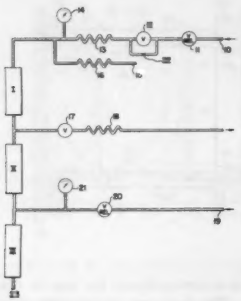
A fluid flowmeter sensing element having a heat sensitive element, electrical heating means therefor and measuring means responsive to the current supplied to the heating means, and metallic support means having a smooth outer surface free from turbulence inducing irregularities. The support means carry the heat sensitive element and the heating means internally thereof in high thermal conductivity with the portion of the outer surface adjacent thereto. The support means, outwardly of that outer surface portion, have reduced thermal conductivity in the plane of the support for maintaining a temperature difference between that outer surface portion and portions outwardly thereof during heating thereof by the heating means.

3,800,593

GAS SAMPLING APPARATUS FOR CHROMATOGRAPHS

M. P. Timothy Bradley, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 3, 1972, Ser. No. 294,671
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 GC 3 Claims



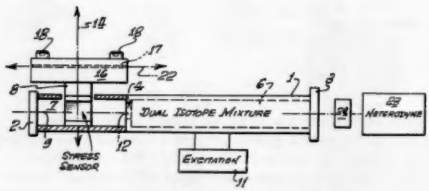
A gas sampling apparatus for use in conjunction with a gas chromatograph in which there are no moving parts in the sample flow path, and the size of the sample is controlled and measured by the pressure differential between the carrier gas and the sample gas and the time for which the sample gas pressure exceeds the carrier gas pressure.

3,800,594

LASER ACCELEROMETER

Thomas J. Hutchings, Orange, and Wilbur L. Zingery, Long Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 2, 1973, Ser. No. 375,578
Int. Cl. G01p *15/08*
U.S. Cl. 73—516 R 7 Claims



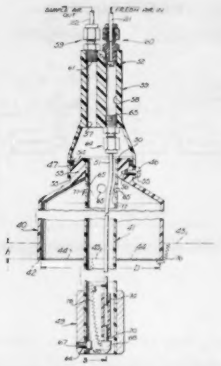
A bi-refringent sensor polarizes a laser beam to produce a pair of cross-polarized beams having a frequency difference proportional to the stresses applied to the sensor. The instrument measures accelerations of a movable object and the stresses applied to the sensor are substantially responsive only to accelerations in a particular sensing direction or axis. For this purpose a flexure coupling pivotally supports a stress-producing proof mass and the coupling is pivotally responsive to acceleration forces acting in the sensing direction and pivotably unresponsive to acceleration forces acting in other directions. The sensor stresses produced by the pivotal proof mass vary the index of refraction of the sensor material proportionately the acceleration so that the polarized beams produced by refringence have a frequency difference proportional to acceleration. Detection of this frequency difference provides the acceleration measurement. A magnetic field assembly reduces undesired magnetic coupling between the cross-polarized beams.

3,800,595

SAMPLE EXTRACTION METHOD AND APPARATUS

Arthur Leonard Vincent, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 8, 1972, Ser. No. 232,716
Int. Cl. G01n *1/22*
U.S. Cl. 73—19 22 Claims



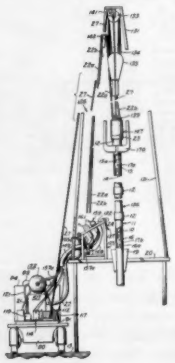
A system for monitoring votitile compounds such as H_2S in sewage liquids. A probe capable of being floated in the liquid is provided with means for bubbling pure air through the liquid and means for collecting the bubbled air. The air, having picked up the votitile compounds is passed to a coulometric titrator for monitoring purposes.

3,800,596

TUBING TESTING METHODS

Clayton L. Phillips, Rt. 14, Box 793-B, Houston, Tex., and Don R. Switzer, 503 Three Corners Dr., Houston, Tex.

Division of Ser. No. 718,186, April 2, 1968, Pat. No. 3,495,443, which is a continuation-in-part of Ser. No. 462,811, June 10, 1965, Pat. No. 3,375,703. This application Feb. 16, 1970, Ser. No. 11,457
Int. Cl. G01m *3/02*
U.S. Cl. 73—40.5 R 3 Claims



A tool and associated portable apparatus is brought on a mount to test location with tool disposed successively in the stand of tubing occupying top position in a well bore tubing string, the associated apparatus being disposed, as with tool

hoist on rig floor, in quickest testing methods. Thus packer setting fluid is applied through one tool channel to deform packers, by pre-adjusted tool piston travel, to adjusted extent to isolate an annular space to receive test fluid supplied through an entirely separate tool channel into the isolated space to test the stand for leakage. The test fluid may be an inert gas allowed to expand after testing so less is expended as the packers are unset.

3,800,597

APPARATUS FOR DETERMINING THE PROCESSING CHARACTERISTICS OF PLASTIC TYPE MATERIALS

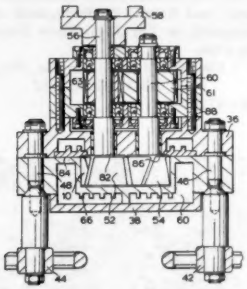
Keith Thomas Paul, 9 Birch Dr., Shawbury, Shrewsbury, Shropshire; George Martin Gale, Westwinds, Lyth Bank, Shrewsbury, Shropshire, and Richard Thomas Humpidge, Rose Cottage, Prescott Baschurch, Shrewsbury, Shropshire, all of England

Filed Aug. 11, 1972, Ser. No. 280,036

Claims priority, application Great Britain, Aug. 11, 1971, 37653/71

Int. Cl. G01n *11/14*

U.S. Cl. 73—59 **7 Claims**



The present invention provides improved apparatus for determining the processing characteristics, in particular the mixing characteristics, of materials having plastic properties. The apparatus comprises a mixing chamber having a pair of contra-rotating, differential speed, mixing rotors therein adapted to be rotated by an electric motor, transducer means for providing an electrical signal dependant upon the torque applied by the motor to the rotors, and continuous recorder means arranged to receive said electrical signal to provide a record of the torque applied.

The invention also provides a rotor design for use in the above apparatus which results in improved mixing characteristics and in more reproducible results from the apparatus.

3,800,598

METHOD FOR EXAMINING THE INNER SURFACE OF A HOLLOW MEMBER

Eberhard Michel, Boxdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

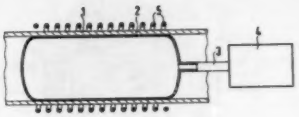
Filed Nov. 9, 1972, Ser. No. 304,920

Claims priority, application Germany, Nov. 10, 1971, 2155812

Int. Cl. G01n *19/08*

U.S. Cl. 73—104 **2 Claims**

A method of examining the inner surface of a hollow member is disclosed. The method includes inserting a test body into the hollow member and pressing the test body against the inner surface of the hollow member at a temperature sufficient to cause at least the surface of the test body to deform whereby a relief of the inner surface of the hollow member is obtained.



An apparatus for performing the method of the invention is also disclosed. The apparatus includes the test body and a pressure generating device for developing the pressure needed to press the test body against the inner surface of the hollow member.

3,800,599

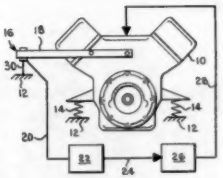
SURGE SENSOR BASED ON ENGINE MOUNT DEFLECTION

Michael B. Goran, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed July 10, 1972, Ser. No. 270,353

Int. Cl. G01m *15/00*

U.S. Cl. 73—116 **3 Claims**



A surge sensory apparatus for detecting and indicating a condition of surging, or rough running, for association with a prime mover is disclosed herein. The present invention senses engine motion and by proper signal processing including any necessary filtering, generates an output signal which may indicate the quality or degree of engine surging. A method of utilizing the surging signal so generated to provide one form of engine control which may be termed a closed loop control is also disclosed. The sensory apparatus of the present invention includes a linear motion transducer, operative to generate an electrical signal indicative of engine motion on the engine mounts which signal is indicative of the torque being developed by the engine.

3,800,600

METHOD AND APPARATUS FOR MANUFACTURING VEHICLE WHEELS

Gordon C. Chapin, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

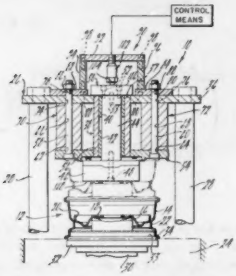
Filed Sept. 14, 1972, Ser. No. 288,935

Int. Cl. G01l *5/00*

U.S. Cl. 73—141 R **19 Claims**

A method and apparatus for determining the degree of interference fit between a wheel rim member and an associated spider member, and including means for applying a force against one member of a partially assembled wheel consisting of the wheel rim member and wheel spider member, means for resisting movement of one of the members in response to the

application of the force, and means for sensing the proportion of the force applied to the one member that is transmitted to the other member, whereby to inform the operator as to the degree of fit between the outer periphery of the spider and the inner periphery of the wheel rim.



3,800,601

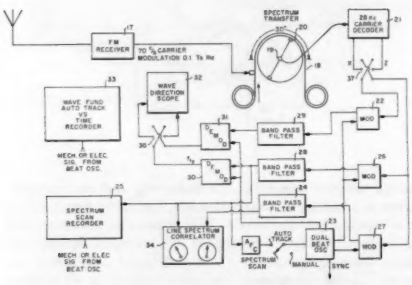
SEA SENSOR AND DESCRIPTOR SYSTEM

Herman A. Soulant, Jr., Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 12, 1970, Ser. No. 88,763

Int. Cl. G01f *23/14*

U.S. Cl. 73—170 A **12 Claims**



The present disclosure relates to a method of determining wave characteristics by employing a float device to measure the slope of a wave and a system for processing this measured data in accordance with the disclosed sawtooth theory of wind generated waves.

3,800,602

MULTI-STREAM GAS CHROMATOGRAPHIC METHOD AND APPARATUS

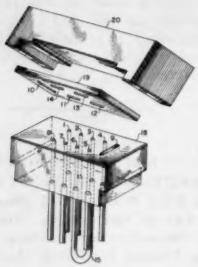
A. William Jones, Wilson, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,032

Int. Cl. G01n *31/08*

U.S. Cl. 73—23.1 **10 Claims**

Apparatus and method for rapid chromatographic analysis of gaseous mixtures. Apparatus includes a programming valve arrangement comprising an eight port valve block, having a single channel and having a movable valve plate member slidably affixed thereto by a valve plate carrier which in a first position permits simultaneous sampling of the gas stream to be analyzed and back flushing of the chromatograph column and in a second position rapid analysis of the gas sample. By the addition of one or more six port programming valves or equivalent sampling means in series with the eight port valve, the apparatus may function to rapidly analyze two or more separate gas streams.



3,800,603

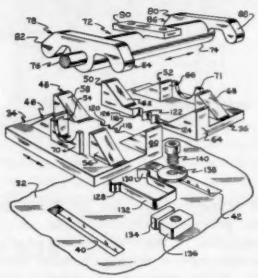
SHIFT MECHANISM

Hans Hauser, and Ronald N. Jones, both of Fredericktown, Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Oct. 4, 1972, Ser. No. 294,798

Int. Cl. G05g *9/12*

U.S. Cl. 74—473 R **7 Claims**



A shift mechanism for a transmission of the type used in riding lawn mowers and the like is provided. The shift pattern is essentially of the lineal type and yet the transmission can be shifted from one gear to another without being shifted through all intermediate gears. For example, the transmission can be shifted from the third forward speed to reverse without progressing through the second and first forward speeds. The shift lever is moved lineally in a path transverse to its longitudinal extent to align the lever with a desired shift position. The lever is then pivoted in a vertical path to effect the desired shifting. The new shift also provides a higher mechanical advantage to make shifting easier for the operator.

3,800,604

STEERING WHEEL FOR MOTOR VEHICLE

Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed June 12, 1972, Ser. No. 261,620

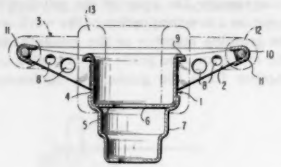
Claims priority, application Germany, June 12, 1971, 2129224

Int. Cl. B62d *1/10*

U.S. Cl. 74—552 **36 Claims**

A steering wheel for motor vehicles which includes a hub that is connected by way of spokes with a steering wheel rim

whereby a hollow body, for example, a pot-shaped or cylindrically shaped hollow body serves as hub whose upper edge is disposed approximately in the plane of the steering wheel rim



whereas the spokes are constructed as supports having equal uniform bending strength in relation to the axial direction of the hub.

3,800,605

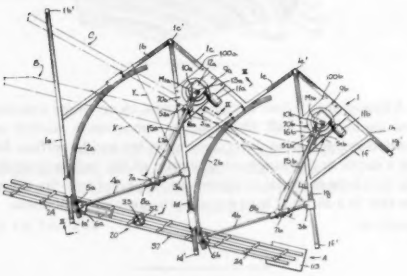
TRANSFER APPARATUS

Jean Leplond, and Jean Biet, both of Compiegne, France, assignors to Uniroyal Englebert France S.A., Paris, France

Division of Ser. No. 794,706, Jan. 28, 1969, Pat. No. 3,613,903. This application June 21, 1971, Ser. No. 155,255

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **6 Claims**



A transfer apparatus for transferring an article from a first location, in which the article is in a first position, to a spaced second location, in which the article is in a second position spaced from and angularly shifted with respect to the first position thereof. The transfer apparatus includes a stationary frame supporting a pair of parallel arcuate guides extending between the aforesaid first and second locations, an article support structure extending between and being movable along these guides, and a pair of drive mechanisms simultaneously independently moving spaced portions of the article support structure different distances along the arcuate guides. Each of the drive mechanisms includes a drive crank, a connecting rod pivotally connected to the drive crank, and a mechanism for changing the location along the drive crank of the pivotal connection of the connecting rod.

3,800,606

INFINITELY VARIABLE TRANSMISSION WITH LUBRICATING WICK MEANS

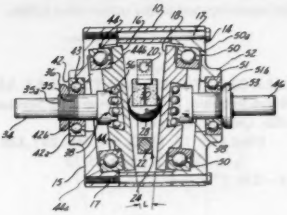
Lawrence A. Schott, 13930 Stansbury, Detroit, Mich.

Filed July 13, 1972, Ser. No. 271,248

Int. Cl. F16h *13/00*

U.S. Cl. 74—198 **6 Claims**

A variable speed drive mechanism in which power is transmitted from an input driving disc to an output driven disc through an intermediate member of spherical configuration. The driving and driven discs are supported with their axes of rotation at an angle and offset. The intermediate spherical member is held by gravity or other means in the trough defined between the two inclined discs. A cage member holds



and linearly guides the intermediate member and a wick provides lubrication for the intermediate member. The radial position of the spherical intermediate member along the faces of the discs determines the drive ratio between the input and output shafts of the mechanism.

3,800,607

FRICTION RING DRIVE WITH INTERMEDIATE DISKS

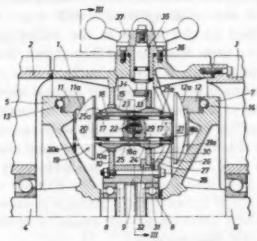
Andre Zurcher, St. Jean, 3280 Merlach, Switzerland

Filed Feb. 4, 1972, Ser. No. 223,672

Claims priority, application Switzerland, Feb. 18, 1971, 2360/71

Int. Cl. F16h *15/26*

U.S. Cl. 74—200 **4 Claims**



A friction drive wherein two substantially coaxial wheel disks support a respective friction ring having substantially conical friction surfaces. One of the wheel disks is connected with a drive shaft and the other wheel disk with a power take-off shaft. A rim of similar transmission mechanisms is arranged substantially coaxially with respect to the friction rings. Each transmission mechanism comprises transmission means and guide means for said transmission means. Each transmission means possesses substantially spherical transmission surfaces maintained in frictional contact with an associated one of the friction surfaces of the friction rings. An adjustment mechanism serves for the common and uniform pivoting of all of the transmission mechanisms in axial planes of the wheel disks for the infinite regulation of the transmission ratio of the friction drive. The adjustment mechanism comprises a rotatable plate member provided with control slot means inclined at a substantially uniform angle to a radius and controlling the guide means of all the transmission mechanisms. The transmission means embodying two substantially spherical section-shaped friction heads having uninterrupted external surfaces defining the transmission surfaces and a respective shaft portion mounted at each friction head. The shaft portions are mounted in a bearing sleeve. A pair of disk members is fixedly mounted in the drive housing. One of

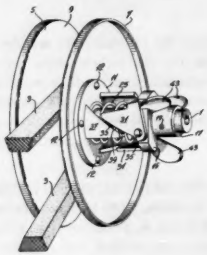
these disk members supports all of the bearing sleeves and the other of the disk members guides such bearing sleeves during the adjustment in the axial planes. The rotatable plate member of the adjustment mechanism and the two fixedly mounted plate members are arranged at a spacing adjacent one another between the friction head situated at the one wheel disk and the friction head situated at the other wheel disk.

3,800,608

VARIABLE DIAMETER V-BELT PULLEY ASSEMBLY

Georges Henri Bessette, 209, Boulevard du Seminaire, St-Jean D'Iberville, Quebec, Canada

Filed Oct. 13, 1972, Ser. No. 297,328
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **6 Claims**



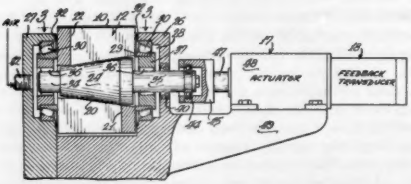
The invention is an improved V-belt pulley assembly of the variable diameter type wherein one pully cheek is fixed to a rotary shaft while the other is freely mounted thereon for sliding translation and relative rotation with respect to the shaft. Pressure applied on the V-belt in the pulley groove is controlled by three arms fixed to the free cheek. Each arm has a pad applied on a straight caming surface of a corresponding cam lever mounted on the shaft for pivotal movement about an axis normal to the axis of the shaft. The caming surfaces of the cam levers are inclined upwardly with respect to the axis of the shaft and in the direction of the second cheek. Centrifugal masses or lugs or a spring-pressed ring apply a controlling force on the cam levers such that the caming surfaces pivot toward the vertical between high and low speeds of the pulley and shaft thereby applying greater pressure against the belt at low speed then at high speed.

3,800,609

CONTOUR GRINDER

Robert L. Schaller, Camillus, N.Y., assignor to Sundstrand Syracuse, Inc., Syracuse, N.Y.

Division of Ser. No. 199,257, Nov. 16, 1971, Pat. No. 3,727,350. This application Mar. 6, 1973, Ser. No. 338,594
Int. Cl. F16h *55/54*
U.S. Cl. 74—230.21 **5 Claims**



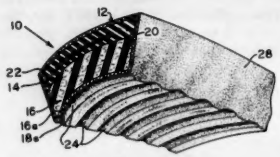
A contour grinding apparatus including an endless belt grinding member trained about a drive roller and an expansible cylindrical guide, the latter of which directs the grinding member past a work station, together with a device for sensing the thickness of the grinding member to detect wear, and a device responsive to the sensing device for expanding the guide to compensate for wear of the grinding member and thereby maintain a constant radius of the work contacting surface of the grinding member at the grinding station. In one form of the invention, the guide is a rotatable contact roller, and in another form the guide is a stationary cylindrical platen.

3,800,610

HEAVY DUTY V-BELT

Andrew P. Wach, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 29, 1972, Ser. No. 293,684
Int. Cl. F16g *5/16*
U.S. Cl. 74—233 **5 Claims**



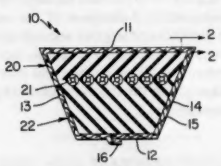
A heavy-duty V-belt is characterized by envelope construction enclosing a stiff fiber-loaded compression section and molded-in transverse corrugations on the inside surface having a depth at the longitudinal center of the belt greater than the envelope material thickness and tapering into the sides of the belt to a depth at least equal to the envelope thickness.

3,800,611

ENDLESS POWER TRANSMISSION BELT

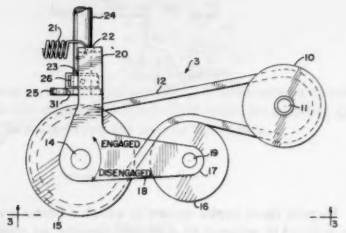
Jerry W. Rogers, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 10, 1973, Ser. No. 322,343
Int. Cl. F16g *1/00, 5/00*
U.S. Cl. 74—234 **9 Claims**



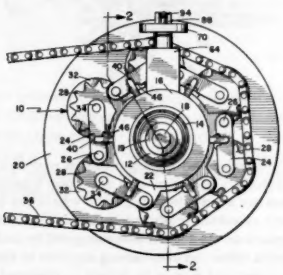
An endless power transmission belt having an extended service life is provided and such belt has a cover which has a layer of a polyepichlorohydrin elastomer which defines a substantially air-impervious shield for the belt and such layer improves aging resistance and assures an extended service life for the belt.

3,800,612
BELT DRIVE APPARATUS
David A. Fulghum, La Grange, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Oct. 10, 1972, Ser. No. 296,463
Int. Cl. F16h 7/10
U.S. Cl. 74—242.15 R 11 Claims



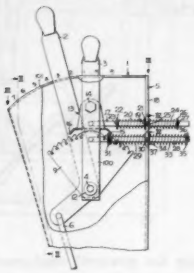
A belt drive apparatus having a clutching pulley assembly held in the engaged position by a spring wherein a second spring opposes the first spring during engagement to allow smooth engagement of the belt.

3,800,613
VARIABLE SPEED SPROCKET DRIVE
Marion A. Clark, 546 W. Pleasant, Tulare, Calif.
Filed Mar. 29, 1973, Ser. No. 345,986
Int. Cl. F16h 55/30
U.S. Cl. 74—244 9 Claims



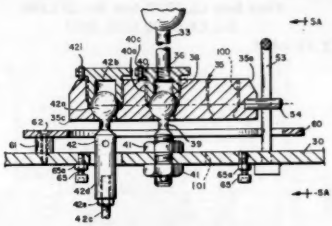
A variable speed sprocket drive utilizing multiple small coplanar sprockets mounted on hinged arms on a common shaft, with means for moving the arms radially in unison to vary the effective diameter of the sprocket group. Each sprocket has a clutch shoe which is frictionally engageable with a common clutch plate on a drive shaft. Control means is provided for rapid adjustment of the sprockets and for engaging and disengaging the clutch. A chain passes around the sprockets for coupling to mechanism to be driven, the structure being particularly adaptable to a bicycle, or other apparatus requiring a low speed variable drive.

3,800,614
DUAL LEVER CONTROL
Wayne E. Johnson, Schereville, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 7, 1972, Ser. No. 312,840
Int. Cl. G05g 1/00
U.S. Cl. 74—473 R 10 Claims



A pair of levers pivotally mounted for pivotal movement about a common axis and interconnected by a ratchet means to incrementally shift one lever by movement of the other lever operating the ratchet means.

3,800,615
SINGLE LEVER CONTROL MECHANISM
John S. Pilch, Ware, Mass., assignor to Ware Machine Works, Inc., Ware, Mass.
Filed June 14, 1972, Ser. No. 262,550
Int. Cl. G05g 9/04
U.S. Cl. 74—471 XY 42 Claims



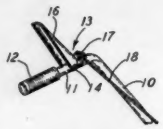
A single lever control mechanism for operating a plurality of control elements which includes a base member, a main control member supported for revolving movement relative to the base member about a member which is spaced from the base member and means for preventing rotation of the main control member about an axis which coincides substantially with the center of said member about which the main control member is revolvable and is substantially normal to the base member, the main control member being operatively associated with at least two control elements which are spaced apart and operatively connected with operators such as moveable valve elements. In preferred embodiments, guide means is provided which functions in conjunction with the configuration of the main control member and the revolving movement of the main control member to automatically, progressively, simultaneously and proportionately decrease the flow of the actuating medium through one operator as the flow of actuating medium through another operator is increased and vice versa. In preferred embodiments, the guide means also arrests tilting movements of the main control member to prevent the exertion of excessive forces upon the operators by actuation of the single lever.

3,800,616

SAFETY GRIP FOR POWERED IMPLEMENT

Knud H. Hoffmeyer, and Charles A. Wuerker, Jr., both of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Continuation of Ser. No. 247,181, April 24, 1972, abandoned.
This application Aug. 20, 1973, Ser. No. 389,492
Int. Cl. G05g 7/04
U.S. Cl. 74—470 6 Claims



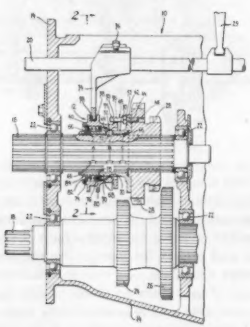
A safety grip for powered implements of the hand-controlled type and including a hand grip being horizontally disposed and having a lever connected therewith and pivoted on a horizontal axis and extending above the hand grip. The weight of the operator's hand and arm are then placed downwardly onto the lever which automatically pivots the lever and which moves the lever into closed position with the hand grip and the operator need not squeeze the lever and hand grip together to achieve the closed position. The lever is connected to the drive train of the implement for controlling mobilization of the implement, and the lever is thus in the nature of a dead man's control.

3,800,617

SELECTOR LOCK

Arthur E. Dornan, Ann Arbor, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed July 12, 1972, Ser. No. 271,095
Int. Cl. G05g 5/06, 9/12
U.S. Cl. 74—475 4 Claims



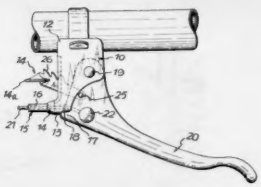
A locking device for two slidably connected members one of which is notched, the other of which has an aperture for a detent which is released or retained in the notch by a third member which is normally positioned to retain the detent by biasing means and slidably connected to the member with the aperture therein in either of two axial directions to release the detent. In one embodiment, the notched member is a shaft with a sliding gear on it and a sleeve attached to the gear having an aperture therein. Another sleeve or ring is axially slidably attached to the above sleeve to retain a ball within the aperture in a notch on the shaft.

3,800,618

BRAKE OPERATING DEVICE FOR BICYCLE

Kiyokazu Yoshigai, 9–15 Wakaeminami-machi 1-chome, Higashiosaka-shi, Osaka-fu, Japan

Filed Jan. 22, 1973, Ser. No. 325,719
Int. Cl. B62k 23/06; B62l 3/02; G05g 5/06
U.S. Cl. 74—489 2 Claims



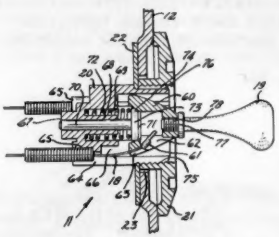
Bicycle hand brake means in which a brake lever is pivoted to a bracket secured to a bicycle handle; an elongated slot is formed through the front wall of the bracket; and a locking lever having its one end pivoted to the brake lever and a toothed engaging portion is extended through the slot so that the locking lever may be selectively engaged with the bracket, thereby maintaining the brake application.

3,800,619

REMOTE CONTROL REARVIEW MIRROR

Matthew McIntyre, Jackson, Tenn., assignor to Jervis Corporation, Grandville, Mich.

Filed Nov. 24, 1972, Ser. No. 309,096
Int. Cl. F16c 1/10
U.S. Cl. 74—501 M 4 Claims



A new and improved remote control rearview mirror employing mechanical Bowden wire actuation where the core cables or wires are always in tension and where the actuator control element is substantially miniaturized by compacting the cable connections via a slotted housing and by including a new and improved vibration eliminating support at the mirror end where the spherical caging is spring augmented beyond the tension originating at the actuator end.

3,800,620

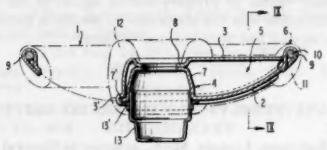
STEERING WHEEL FOR MOTOR VEHICLES

Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz AG

Filed June 12, 1972, Ser. No. 261,612
Claims priority, application Germany, June 12, 1971, 2129285
Int. Cl. B62d 1/10
U.S. Cl. 74—552 51 Claims

A steering wheel for motor vehicles which includes a steering wheel rim connected by way of spokes with the steering

wheel hub; the parts which form the steering wheel hub and the spokes are assembled from two sheet metal members;



namely, a sheet metal bottom member and a sheet metal cover member that are connected shear-rigid with one another and form hollow bearers within the area of the spokes.

3,800,621

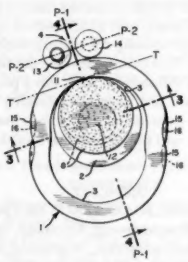
CAM CONTROL GRINDING MACHINE

Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Division of Ser. No. 164,406, July 20, 1971, Pat. No. 3,663,188, which is a continuation-in-part of Ser. No. 147,145, May 26, 1971. This application Mar. 22, 1972, Ser. No. 237,175

Int. Cl. F16h *53/00*

U.S. Cl. 74—567 **9 Claims**



A cam-cam follower system having a cam with a curved surface. A cam follower engages the cam at a position lying in a predetermined plane normal to the surface at that position. Drive elements move the surface through the position while guide follower elements maintain the surface normal to the predetermined plane.

3,800,622

BALANCING DEVICE

Jan Stelwagen, and Huibert Van Loon, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

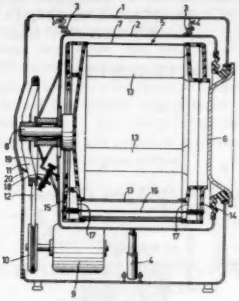
Filed Aug. 30, 1972, Ser. No. 284,965

Claims priority, application Netherlands, Sept. 11, 1971, 7112526

Int. Cl. F16f *15/16*

U.S. Cl. 74—573 F **6 Claims**

Balancing device for a rotatable drum, which is resiliently mounted and may be eccentrically loaded, provided with receptacles for a balancing material. A nozzle of a conduit portion intended to convey this material to the receptacles is mounted for movement about two axes at right angles to one another by relative movement of two component parts of the device to which it is attached. The conduit is supported by ball joints to two separate support brackets, one of which is movable with respect to the other.



3,800,623

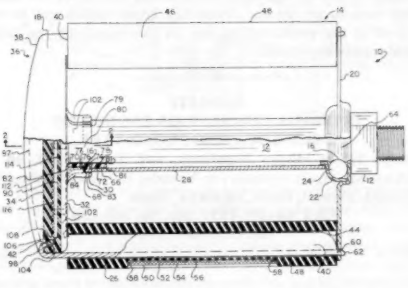
BICYCLE PEDAL

Martin R. Baginski, Austinburg Twp., Ashtabula Cty., Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio

Filed May 1, 1972, Ser. No. 249,368

Int. Cl. B62m *3/12*

U.S. Cl. 74—594.4 **12 Claims**



A reflectorized bicycle pedal includes a pedal axle, a pedal body and bearing means which support the pedal body for rotation relative to the pedal axle. The pedal body is defined by a plurality of members and has an inboard and an outboard end. The frame member of the pedal body has an outboard end portion which defines a portion of the outboard end of the pedal body and has an opening therein. The pedal body further includes a reflector which is visible through the opening in the outboard end portion of the frame member and is also protected from damage by the frame member. The reflector is positioned between two pedal body members and is supported by at least one pedal body member by sealing the reflective facets of the reflector to one of the pedal body members to prevent exposure of the surface of the reflector to foreign matter.

3,800,624

WINDSHIELD WIPER PARTICULARLY FOR AUTOMOTIVE VEHICLES

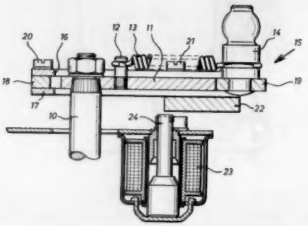
Heribert Klement, 5 Holzwiesenstrasse, and Heinz Jakob, 15 Frankfurter Strasse, both of 712 Bietigheim, Germany

Filed Mar. 23, 1971, Ser. No. 127,310

Claims priority, application Germany, Mar. 24, 1970, 2014051

Int. Cl. G05g *1/00*

U.S. Cl. 74—600 15 Claims



A windshield wiper has a repose or parking position of the wiper arms which is outside the wiping field, and includes a switching device actuated, responsive to opening of the wiper motor control switch, to initiate a response movement by variation of the radius of a crank secured to a driven shaft driven by the wiper motor. A first crank part is secured to the driven shaft and serves as a guiding part, and a second crank part is supported and guided by the first crank part for limited adjustment longitudinally of the crank. Springs, which may be tension springs or compression springs, are engaged between the first and second crank parts and bias the second crank part in one direction relative to the driven shaft. A control element, such as the armature of a solenoid or electromagnetic device, is protruded into the path of movement of the second crank part responsive to energization of the switching device to adjust the relative position of the second crank part in opposition to the springs to vary the crank radius for the additional respose movement. Either the crank radius may be increased or the crank radius may be decreased for the additional repose movement.

3,800,625

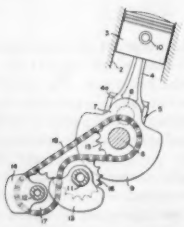
INTERNAL COMBUSTION ENGINES OF RECIPROCATING PISTON TYPE

Tetsuya Seino; Mitsuo Nagahama, and Kengo Nishi, all of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shingai, Iwata, Shizuoka, Japan

Filed May 29, 1973, Ser. No. 364,730

Int. Cl. F16f *15/10*

U.S. Cl. 74—604 6 Claims



The present invention relates to a reciprocating piston type internal combustion engine, wherein the resultant of the vectors of inertia forces according to the rotation of the second and third balance weight means pass through the axis of the crank-shaft and equal in value and opposite in the direction to the resultant vector of primary inertia forces of the piston-crank mechanism and the transmission means is provided to rotate the second and third balance weights.

3,800,626

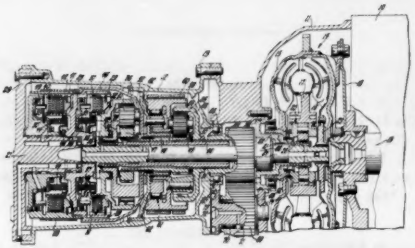
TRANSVERSELY MOUNTED ENGINE DRIVEN TRANSMISSION

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1973, Ser. No. 326,766

Int. Cl. F16h *37/08*

U.S. Cl. 74—695 2 Claims



A transmission in which a torque converter, a planetary gear set, final drive gears, and a differential are assembled in unitary package. The housing for the transmission includes a unitary cast portion. This portion houses the torque converter, final drive gears and differential, and, has a plurality of spaced parallel walls in which are formed a plurality of bearing supports. The supports provide locations for rotatably mounting the final drive gears, and the output shafts of the differential.

3,800,627

HYDRAULIC CONTROL DEVICE

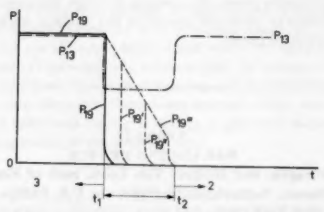
Gerd Oberpichler, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 21, 1972, Ser. No. 273,720

Claims priority, application Germany, July 24, 1971, 2137160

Int. Cl. F16h *3/74*

U.S. Cl. 74—752 C 8 Claims



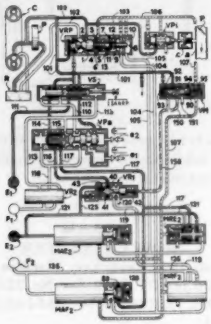
An improvement in controlling the automatic shifting of a planetary gear in an automatic transmission for motor vehicles. The purpose is to make the down-shift a smoother operation by eliminating the shifting jolt caused by a downshift made when the engine is incorrrctly synchronized with the lower gear for a given vehicle speed.

3,800,628

HYDRAULIC SYSTEM FOR CONTROLLING A GEARBOX

Jean Piret, Bougival, France, assignor to Automobiles Peugot, Paris and Regie Nationale Des Usines Renault, Boulogne-Billancourt, both of, France

Filed Aug. 14, 1972, Ser. No. 280,103
Claims priority, application France, Sept. 28, 1971, 71.34770
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—864 11 Claims



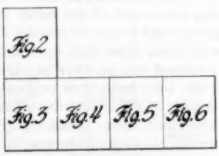
This improved system for automatically varying, as a function of the conditions of operation of the engine (torque and running speed), the duration of the transitory stage when changing under torque from one gear ratio to the immediately lower gear ratio in an automatically controlled gearbox. For this purpose, there is exerted on the slide valve of the main relay valve a force which varies in accordance with said conditions, for example by employing a modulating valve which establishes a modulated pressure in a pipe.

3,800,629

ENGINE AND TRANSMISSION POWER TRAINS AND CONTROLS

Carl A. Lentz, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1972, Ser. No. 300,865
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—869 22 Claims



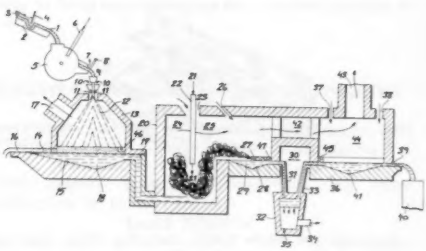
A power train having a gas turbine engine, a direct coupled multiratio transmission and an automatic trimmed shift control system having a manual valve, shift valves responsive to a torque demand signal provided by gas turbine engine compressor discharge pressure and an output speed signal and timed pressure increasing trimmer valves for establishing the ratio drives and a throttle controlled neutral to first drive pressure regulating and shift control providing when the manual valve is in drive position and the throttle is in an off position, idle fuel feed and zero pressure for a positive neutral, during throttle movement from off position to a low throttle position, continuing idle fuel feed and then a small fuel feed increase and a gradually increasing pressure in a low pressure range controlling the rate of low power engagement of first drive and during further throttle movement from low throttle to full throttle, low to full fuel feed trimmer valve timed increasing pressure in a higher pressure range for high power engagement of first drive and full high pressure for maintaining high power first drive fully engaged and increasing. The throttle pedal controlled pressure regulator is disabled to prevent low pressure range regulation and supply full pressure to the trimmed shift control system by pressure above a low speed to maintain high power drive for overrun braking, during reverse drive as gradual low power engagement of reverse is not required and above a low torque demand or compressor discharge pressure for low pressure regulation only at low engine torque and power engine output.

3,800,630

PROCEDURE AND INSTALLATION FOR CONTINUOUS STEEL MAKING

Iosif Tripsa, Bucharest; Ion Potoceanu, Galati; Ilie Nisipeanu, Galati; Corneliu Velicov, Galati; Constantin Popescu, Galati; Cornel Cazan, Galati; Nathan Kraft, Galati; Gheorghe Driscu, Galati; Ilie Martin, Galati; Dan Dulama, Galati; Ovidiu Tanasescu, Bucharest; Nicolae Deica, Bucharest; Edmond Berceanu, Bucharest; Dante Cosma, Bucharest, and Nicolae Furnicescu, Bucharest, all of Romania, assignors to Consiliul National Pentru Stiinta si Technologie, Bucharest, Romania

Filed Oct. 1, 1971, Ser. No. 185,503
Claims priority, application Romania, Oct. 8, 1970, 64632
Int. Cl. C21c 7/02, 7/10
U.S. Cl. 75—49 3 Claims



A process for the continuous production of steel wherein a stream of iron, admixed with alloying ingredients, slag-forming elements and the like is atomized with compressed air at a pressure of 7 to 8 atmospheres to remove phosphorous, silicon and manganese. The melt is continuously drawn from the collecting basin in this chamber beneath the slag layer and is then atomized by directing a blast of oxygen at the stream of iron to decarburize the melt which is thereupon collected, separated from slag and finely vacuum-processed and alloyed, all in a continuous stream.

3,800,631

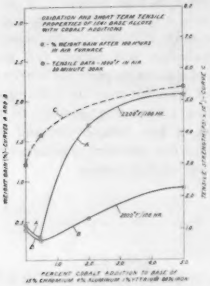
FE AL CR Y CO ALLOY

Walter G. Baxter, San Jose, Calif., assignor to General Electric Company, New York, N.Y.

Filed May 11, 1972, Ser. No. 252,204
Int. Cl. C22c 37/10, 39/14
U.S. Cl. 75—124 2 Claims

Addition of approximately 0.5 weight percent of Co to prior art's Fe-Al-Cr-Y alloy reduces oxidation rate in air at 2,000°F

to approximately one-fourth or less, and at 2,200° F to approximately two-thirds, of same alloy without Co. while producing



improved tensile strength. Useful, inter alia, for automotive anti-pollution thermal exhaust reactor.

3,800,632

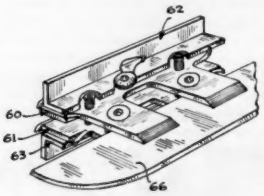
BLADE SHARPENING GUIDE

John R. Juranitch, 932 S. Layton Blvd., Milwaukee, Wis.

Continuation-in-part of Ser. No. 33,790, May 1, 1970, Pat. No. 3,654,823. This application Mar. 15, 1972, Ser. No. 234,861The portion of the term of this patent subsequent to Apr. 11, 1989, has been disclaimed.

Int. Cl. B21k *11/02*

U.S. Cl. 76—82 **12 Claims**



A clamp-type blade holder including blade edge angle determining bars for guiding the sharpening of a blade edge on a flat sharpening surface, such as a hone. The blade holder includes guide bars coacting with the blade edge to engage the hone and maintain the sharpening angle the same during all stroking on the hone, thereby producing an accurate sharpening angle that will enable a razor edge. The guide bars are adjustable in one embodiment to permit quick and easy change of the sharpening angle.

3,800,633

METHOD OF MANUFACTURING BIMETALLIC HIGH-SPEED CUTTING TOOLS

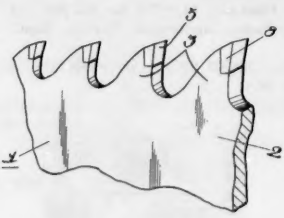
Toshiei Funakubo, Odawara, Japan, assignor to Kabushiki-Kaisha Eishin, Tokyo, Japan

Division of Ser. No. 106,681, Jan. 15, 1971, Pat. No. 3,736,828. This application July 25, 1972, Ser. No. 274,842

Int. Cl. B23d *65/00*

U.S. Cl. 76—112 **3 Claims**

A bimetallic high-speed cutting tool having a series of spaced teeth provided on one of its longitudinal edges is manufactured by providing each tooth at its forward top end with a cut-out portion on which a tip of super-hard material, molded before being sintered into a shape substantially equal to a desired final configuration, and having as cutting edges sharp square corners, is welded or brazed, so that the machining of said tip to said desired final configuration, after it has been welded or brazed to the tooth body is minimized, the super-hard materials constituting said tip being selected from



those having such hardness and flexural strength as not to be affected by the heat applied thereto when the tip is welded or brazed firmly onto the tooth body.

3,800,634

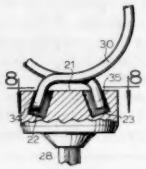
HOSE CLAMP TOOL

Henry C. Clayton, 1821 Keats Ave., Madison Heights, Mich.

Filed Jan. 31, 1972, Ser. No. 221,973

Int. Cl. B25b *27/00*; **B65d** *63/02*

U.S. Cl. 81—9.3 **9 Claims**



A tool for forcing a self-contracting hose spring clamp ring to its expanded position and for maintaining it in its expanded position for mounting or removing the ring wherein the ring has overlapping circumferential portions terminating in radially outwardly extending paired arms. The tool has a rotatable body, a central pivot point, and paired opposed cams. The tool is positionable relative to the arms of the clamp ring in its clamped position with the outer end of one cam adjacent one arm and with the outer end of the other cam adjacent the other arm. When the tool is rotated relative to the clamp ring, the cams move the arms from their normal circumferentially spaced position toward one another to expand the ring and forceably move the arms from their original position on one side of the pivot point of the tool to the other side of and past the pivot point to an over-center position and against the inner ends of the cams thereby locking the ring in expanded condition until the tool is reversely rotated to allow the ring to contract.

3,800,635

AUTOMATIC LATHE

Kenji Nemoto, Tokyo, and Akira Saito, Narashino, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 30, 1971, Ser. No. 214,223

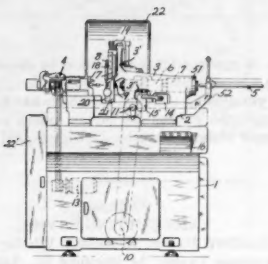
Claims priority, application Japan, Dec. 30, 1970, 45-127223

Int. Cl. B23b *13/00*

U.S. Cl. 82—2.5 **9 Claims**

A high speed automatic lathe of the movable spindle head type has a quill spindle comprising a hollow spindle provided

with a collet chuck rotatable in a non-rotating but axially movable quill. A tool frame for supporting a plurality of tools is made in one piece with a work spindle frame in which the quill spindle is mounted for axial movement thereby assuring rigidity of construction and accuracy of positioning of the tools relative to the spindle. The spindle is rotated at high speed by a high frequency motor mounted in the work spindle frame in axial alignment with the spindle and provided with an axial bore for passage of a work piece through the motor to the spindle. The quill spindle is movable in an axial direction



relative to the motor to provide feeding movement of the work piece while maintaining a direct drive connection between the spindle and the motor. Axial movement of the quill spindle is controlled by a plurality of cooperating cams, thereby simplifying cam layout machine. Cam operated means is also provided for opening and closing the chuck of the spindle while the spindle is rotating at high speeds and without interfering with axial movement of the spindle. The spindle, the cam shaft and a tool attachment having tools for machining the end of a work piece are driven by separate motors thereby avoiding gear boxes and interconnecting shafting.

3,800,636

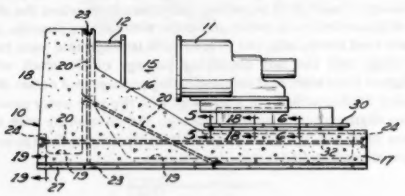
CONCRETE FRAME MACHINES

Frank G. Zagar, 19930 Edge Cliff Dr., Euclid, Ohio

Filed Oct. 13, 1972, Ser. No. 297,402

Int. Cl. B23b *17/00*

U.S. Cl. 82—32 **6 Claims**



A machine tool frame mounts and carries machine tool components which face each other with a working space between them. The frame is made of compression reinforced concrete. The compression reinforcement establishes compression preloading in the frame between the machine tool components and partly around the working space.

3,800,637

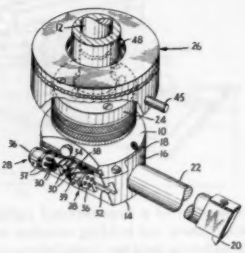
BORING AND FACING APPARATUS

Jule A. Scholl, 41-31 51st St., Woodside, N.Y.

Division of Ser. No. 127,136, March 23, 1971, Pat. No. 3,744,356. This application Jan. 11, 1973, Ser. No. 322,772

Int. Cl. B23b *25/06*

U.S. Cl. 82—34 D **2 Claims**



A cutting tool is carried by a carriage which is slidably engaged by a rotatable body connected to a drive shaft so that the body and carriage rotate together to perform boring and facing operations. The rotational movement of the body relative to a reference member produces transverse sliding movement of the carriage relative to the body thereby increasing the diameter of the circular path followed by the cutting tool. The ratio of transverse movement of the carriage to rotational movement of the body can be altered by rotating the reference member. A mechanism which includes a plurality of carriage stops is provided for arresting the transverse movement of the carriage. This mechanism is indexed by the movement of the carriage to bring successive stops into operative position in sequence.

3,800,638

APPARATUS FOR DEFLASHING HOLLOW BODIES OF PLASTIC MATERIAL

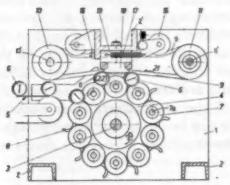
Marcel Duikers, La Hulpe, and Maurice Minsart, Namur, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Nov. 10, 1971, Ser. No. 197,419

Claims priority, application France, Nov. 10, 1970, 70.40532; Feb. 18, 1971, 71.05655

Int. Cl. B23b *3/04*

U.S. Cl. 82—101 **16 Claims**



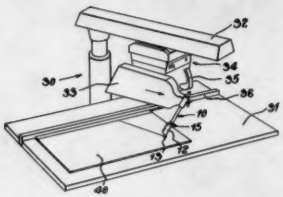
Apparatus for deflashing hollow bodies of plastic material including a series of gripping elements mounted on a support and moved along a path of transport to grip the necks of a succession of plastic bodies delivered to the apparatus by a conveyor, and to remove the bodies from the conveyor for further movement along the path to a position where the necks of the bodies are engaged by a cutting tool along a portion of the path of transport. Another movable element in the apparatus is positioned to engage the necks of the respective bodies as they approach the cutting tool and to impart a rotational movement to the neck of each body during the time the neck is engaged by the cutting tool.

3,800,639

GLASS CUTTER

Michael F. Restel, 95 New York Ave., Bergenfield, N.J.

Filed Dec. 29, 1972, Ser. No. 319,781
Int. Cl. C03b 33/02; B26d 3/08
U.S. Cl. 83—9 6 Claims



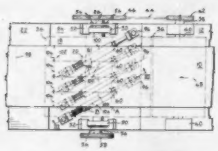
The combination of a conventional radial arm saw which has an anti-kickback rod holding member and a glass cutting attachment which is held in place by the anti-kickback rod holding member. By axially moving the radial arm of the saw, a piece of sheet glass positioned on the radial arm saw's bench may be scored as required preparatory to breaking the glass along the scored line.

3,800,640

APPARATUS AND METHOD FOR CUTTING A TRAVELLING WEB OF MATERIAL

Arnold Varden Barrie, 8 Ottaway Ave., Ontario, Canada

Filed Feb. 5, 1973, Ser. No. 329,662
Int. Cl. B26d 1/36, 1/40
U.S. Cl. 83—37 15 Claims



As a web of material travels between a conventional cutting head and an anvil unit a straight cutting edge of a rotating blade of the cutting head presses the web against the anvil unit and thereby cuts the web. The cutting edge and the web move together at the same rate over the anvil unit. The anvil unit has a plurality of identical parallel idler rollers resiliently mounted to avoid undercutting or scarring by the cutting edge and aligned at a relatively large oblique angle with respect to the cutting edge so as to reduce banging of the cutting edge against the anvil unit and thereby reduce dulling of the cutting edge. The rollers are arranged side-by-side so that every part of the width of the web passes over some part of a roller against which it can be cut by the cutting edge. Perforations or continuous cuts extending across the entire width of the web can be made.

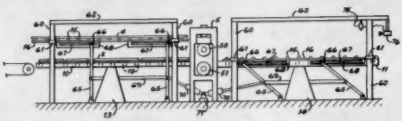
3,800,641

BLANK PUNCHING METHOD AND APPARATUS

Ernst M. Spengler, Lerchenstrasse 47, D-6056 Heusenstamm, Germany

Continuation-in-part of Ser. No. 883,856, Dec. 10, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,520
Claims priority, application Germany, Dec. 17, 1968, 1815115
Int. Cl. B26d 7/06; B26f 1/42
U.S. Cl. 83—50 13 Claims

This disclosure relates to a method and apparatus for punching out blanks from sheet materials. The material is laid on a base plate and punch knives are arranged in a pattern upon the material and covered by a pressure plate to form a sandwich assembly which is conveyed through a roller punching machine to force the knives through the material. When the sandwich has passed between two pressure rollers, the pressure plate is returned to its starting position with the aid of one of the rollers which rotate continuously in the same



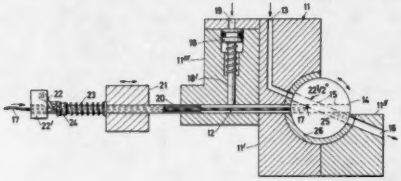
direction. A new sandwich may then be passed between the rollers. In a modification an electromagnetic lifting device is provided comprising a frame on which bar magnets are adjustably mounted so that the punch knives can be removed and replaced without disturbing their original pattern of distribution.

3,800,642

YARN CUTTING DEVICE

William Sandford Hasler, Brookland Whalley Rd., Langho, and Lawrence Taylor, 34 Hertford St., Mill Hill, both of Blackburn, England

Filed Mar. 23, 1972, Ser. No. 237,309
Claims priority, application Great Britain, Mar. 23, 1971, 7626/71
Int. Cl. D01g 1/04; B65h 51/16
U.S. Cl. 83—98 7 Claims



A cutting device for cutting-off tufts of yarn for use with a tufting machine comprising a body having a portion defining a cutter-shaft contacting surface defining at least one yarn entry passage and at least one air passage communicating, a cutter shaft slidably displaceable over said surface and having wall portions defining at least one tuft displacing passage extending therethrough, ducting means aligned with the displacing passage of said shaft to receive tufts therefrom when the shaft is displaced to be in communication with said air passage, and yarn feed means adapted to feed yarn through said yarn entry passage into the tuft displacing passage of the shaft when aligned therewith; said tuft displacing passage and cutter shaft being displaceable from alignment with the yarn entry passage into alignment with said air passage and co-operate with said yarn entry passage and cutter-shaft contacting surface to sever yarn when supplied by said feed means.

3,800,643

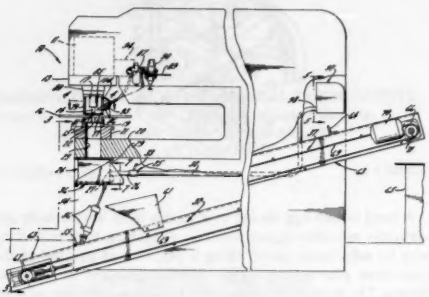
PUNCH PRESS WITH IMPROVED SLUG HANDLING SYSTEM

William B. Scott, Steward, and Roger V. Sawvell, New Milford, both of Ill., assignors to W. A. Whitney Corp., Rockfort, Ill.

Filed July 24, 1972, Ser. No. 274,396
Int. Cl. B26d 7/18
U.S. Cl. 83—100 13 Claims

A punch press includes a bin mounted below a die and communicating with the latter by way of a passage which directs

slugs punched from the workpiece into the bin. A vacuum source is connected to a pipe leading from the bin and draws the slugs through the passage and into the bin. Mounted beneath a door in the bottom of the bin is a power operated conveyor for transporting the slugs away from the bin. The door may be opened automatically during an interruption in the punching operation of the press whereby the slugs are dumped onto the conveyor after the latter is actuated to carry the slugs away from the bin. During the punching operation,



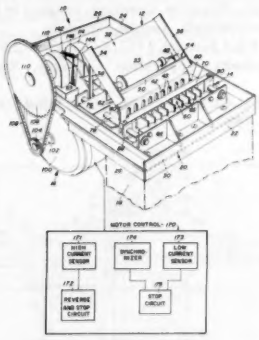
refrigerated air and lubricant are forced under pressure into a chamber defined by a stripper housing which encloses the punch, the lubricant and the air forming a mist for cooling the punch. As the mist escapes from the chamber through an opening in the stripper, it is drawn into the die by the vacuum and thus also cools and lubricates the die. Excess lubricant is drawn through the bin into the pipe and is separated from the air by a filter at the discharge end of the pipe before the air is exhausted into the atmosphere.

3,800,644

DESTRUCTION AND DISPOSAL DEVICE FOR HYPODERMIC SYRINGES OR THE LIKE

Merle C. Garvis, Great Falls, Va., and Martin Beer, Severna Park, Md., assignors to Information Consultants, Inc., Washington, D.C.

Filed June 2, 1972, Ser. No. 258,976
Int. Cl. B26d *7/06*
U.S. Cl. 83—145 **12 Claims**



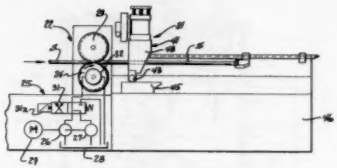
A destruction and disposal device for hypodermic syringes, vials ampules, or the like, comprising a plurality of cutting blades moveable into and out of shearing relationship. A syringe or the like to be destroyed is disposed between the blades and is severed at a plurality of points along its axis, simultaneously. Means are provided for automatically feeding the articles to be destroyed to the cutting area and for automatically disposing of the cut remnants.

3,800,645

HYDRAULICALLY OPERATED CROPPING APPARATUS

Richard A. Alcock, Rockford, and Wayne A. Shosie, Loves Park, both of Ill., assignors to Fasteners Engineers, Inc., Rockford, Ill.

Filed Sept. 21, 1972, Ser. No. 290,892
Int. Cl. B26d *1/04*
U.S. Cl. 83—198 **13 Claims**



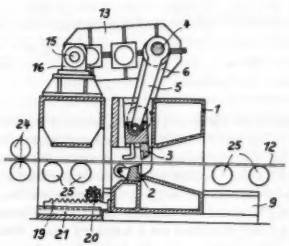
An apparatus for shearing end sections from elongated metal stock in which the shear members are moved crosswise of the stock in a shear stroke and returned by an hydraulic operator. Fluid under pressure is reversibly supplied to the hydraulic operator under the control of a flow reversing valve having an electro-responsive actuator, and the distance through which the hydraulic operator moves the shear members is controlled by an interval timer which applies an electrical pulse to the electro-responsive valve operator of a duration sufficient to cause the hydraulic operator to move the shear members in their shear stroke. The interval timer is actuated by a stock gauge after a predetermined length of stock has advanced past the shear members. The shear members are advantageously mounted on a movable carriage for movement with the stock.

3,800,646

FLYING GUILLOTINE SHEARS

Willi Benz, Neuss, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 6, 1973, Ser. No. 338,571
Claims priority, application Germany, Mar. 6, 1972, P 22 10 699.6
Int. Cl. B23d *25/04*
U.S. Cl. 83—320 **5 Claims**



The flying guillotine shears of the invention are for shearing moving rolled stock and have a blade carriage which moves in the same direction as and at the same speed as the stock and two co-operating blades on the blade carriage, one of the blades moving vertically in order to make the shear cut. The moving blade is directly coupled to a crank shaft by a connecting rod, and the crank shaft is connected to the carriage by a link in order to take up the reaction to the shear cut and is also connected to a fixed member by means of a radius rod so that the crank shaft is pivotal about an axis which is at approximately the same height as the crank shaft axis.

3,800,647

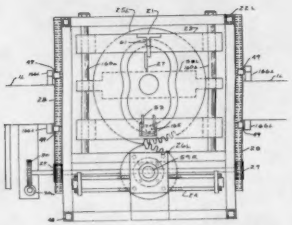
MACHINE FOR TRIMMING THE EDGES OF PANELS

Donald B. Morse, and Bernard A. Pribish, both of Joliet, Ill., assignors to Kemlite Corporation, Joliet, Ill.

Division of Ser. No. 99,135, Dec. 17, 1970. This application Dec. 18, 1972, Ser. No. 316,264

Int. Cl. B26d 5/16

U.S. Cl. 83—365 10 Claims



Apparatus for severing web materials especially for severing the web between successive panels which are attached to the web.

The apparatus includes a knife structure which is disposed on one side of the web and the supporting member on the other side of the web. Special cam means are provided for moving the knife and the anvil member toward and away from the web.

3,800,648

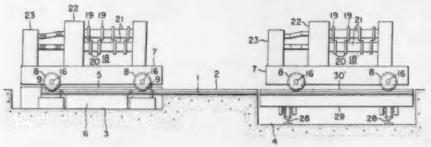
APPARATUS FOR INTERCHANGING SHEET-METAL SLITTING EQUIPMENTS

Kyutaro Nishiyori, and Masahiro Okada, both of Fukuoka, Japan, assignors to Kabushiki Kaisha Watanabe Kekkosho, Fukuoka, Japan

Filed Aug. 10, 1972, Ser. No. 279,624

Int. Cl. B23d 19/06

U.S. Cl. 83—479 3 Claims



An apparatus for interchanging sheet-metal equipments includes a main track formed by a pair of parallel rails on which one of the slitting equipments is normally placed, and two side-tracks each formed by a pair of parallel rails on one of which the other of the slitting equipments is normally placed and through which the slitting equipments interchange. The side-tracks are mounted on a wheeled truck movable perpendicular with respect to the main track so that selected one of the side-tracks is allowed to come in alignment with the main track. The said one of the slitting equipments on the main track is in a slitting position thereof, and the other slitting equipment on one of the side-tracks is in a stand-by position thereof.

When it is desired to interchange the slitting equipments, the slitting equipment in the slitting position is required to run on the main track onto the other side-track and thereafter the side-track bearing truck is shifted to allow the said one of the side tracks carrying the other slitting equipment to be brought into alignment with the main track, thus allowing the other slitting equipment to travel on the main track into the slitting position.

3,800,649

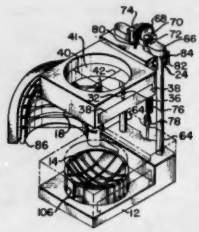
HARD BOILED EGG SLICING APPARATUS

Von Zill Chinn, 4603-124th Ave. So., Seattle, Wash.

Filed Oct. 19, 1972, Ser. No. 299,055

Int. Cl. B26d 1/00; A47j 43/00

U.S. Cl. 83—651.1 4 Claims



A hard boiled egg slicing unit having both horizontally and vertically movable slicing portions whereby a hard boiled egg may be selectively sliced along a plurality of parallel and/or transverse planes to provide a wide variation of egg slice shapes. The horizontal slicing unit includes a plurality of vertically spaced slicing wires mounted for horizontally pivotal movement with respect to an egg supporting platform mounted on a base member, and further includes a horizontally pivotal egg side support structure which is slotted to receive the vertically spaced slicing wires and prevents the sliced egg from being moved from the egg supporting platform during horizontal slicing. The vertically movable slicing portion includes a top frame mounted for sliding movement on one or more vertical guide columns extending upwardly from the base member. The top frame includes resilient means biasing the frame upwardly such that the top frame is at rest in the raised position and is manually slidable down the guide columns toward the egg supporting platform during slicing. The top frame includes a side opening into which slicing wire supporting frames mounting variously positioned slicing wires may be selectively inserted.

3,800,650

APPARATUS FOR THE TEMPLATE CUTTING OF WORKPIECES

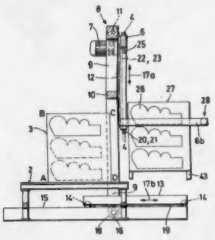
Josef Schroder, Wurselen, Germany, assignor to Fecken-Kirfel KG Maschinenfabrik, Aachen, Germany

Filed June 30, 1972, Ser. No. 267,867

Claims priority, application Germany, Sept. 9, 1971, 2145062

Int. Cl. B23d 53/04, 53/08; B26d 1/46

U.S. Cl. 83—789 21 Claims



The apparatus includes a means for cutting through a vertically disposed surface of a workpiece that is maintained in a stationary position. The cutting means is movably supported

for movement along the vertically disposed surface. Means are provided for scanning a pattern defined by a template. The movement of the cutting means is directed along the vertically disposed surface of the workpiece and responds to the positional location of the scanning means along the template pattern.

ERRATUM

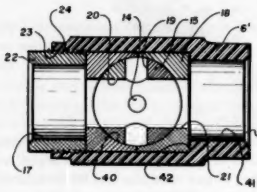
For Class 83—74 see:
Patent No. 3,801,089

3,800,651

TRANSPOSING DEVICE FOR MUSICAL INSTRUMENTS

Terence S. Small, 4423 N.W. 13th Ave., Gainesville, Fla.

Filed Mar. 26, 1973, Ser. No. 345,224
Int. Cl. G10d *9/00*
U.S. Cl. 84—386 **14 Claims**



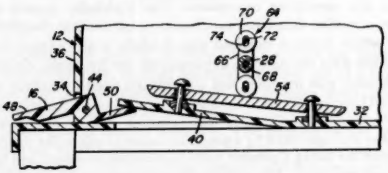
A transposing device particularly suited for a woodwind instrument, positioned between the mouthpiece and bell, forming a portion of the instrument's bore. The device includes means for selectively altering the internal bore diameter whereby tonal quality and pitch of the instrument may be selectively modulated.

3,800,652

MUSICAL TONE GENERATING APPARATUS

John V. Shubeck, 34 Montgomery St., Bloomfield, N.J.

Filed Jan. 2, 1973, Ser. No. 320,119
Int. Cl. G10d *13/08*
U.S. Cl. 84—404 **4 Claims**



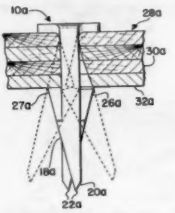
A continuously rotating striker assembly intermittently engages a selected one of a plurality of tone bars mounted on elastically deformable portions of a platform, to produce musical tones. The deformable portions of the platform are deflected in response to displacement of keys from rest positions by variable amounts to control the intensity of the musical tones produced upon contact of the tone bars by floating striker elements of the striker assembly.

3,800,653

METAL PENETRATING STAPLE

Gerald Dean Barth, Dundee, and Ralph Ernest Jennings, Glen Ellyn, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 29, 1972, Ser. No. 230,365
Int. Cl. F16b *15/04*
U.S. Cl. 85—13 **9 Claims**



A metal penetrating staple formed from a resilient sheet stock material and which has entering points, each including a pair of camming surfaces of dissimilar lengths. One longitudinal edge of each leg of the staple includes locking means which cooperate with the longest camming surface to produce a spring-like lock beneath a metal plate after the staple has penetrated the plate.

3,800,654

DRIVE FASTENER DEVICE

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Continuation of Ser. No. 46,397, June 15, 1970, abandoned.
This application Sept. 11, 1972, Ser. No. 288,157
Int. Cl. F16b *15/00*
U.S. Cl. 85—49 **2 Claims**

The present invention relates generally to improvements in staples and spikes and in methods for producing same. The invention as disclosed herein contemplates a novel staple or spike structure wherein the work engaging extremities of the staple or spike tines present chisel-like arcuate edges of limited extent at the convergence of longitudinal oppositely disposed swaged surfaces. Each tine extremity also present opposed longitudinal surfaces disposed at substantially 90° with respect to the converging swage surfaces, and terminate at opposite ends of a complemental arcuate or curved work engaging edge. The invention also contemplates a novel method of producing the above-mentioned structure by shearing and swaging the opposite extremities of a pre-determined length of metallic rod stock.

3,800,655

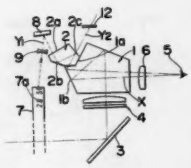
PHOTOGRAPHIC VIEWFINDER ARRANGEMENT

Isamu Uchida, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Dec. 14, 1972, Ser. No. 315,220
Claims priority, application Japan, Dec. 20, 1971, 46-121020
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 R **7 Claims**

A viewfinder arrangement which comprises a pentagonal prism, an auxiliary prism cemented to the pentagonal prism, a reflective element for reflecting images of the adjusting scales

towards the axuiliary prism whereby the length of the optical path from the adjusting scale on the camera lens barrel to the eye of a photographer through the auxiliary prism and the pentagonal prism by means of the reflective element is made longer than the length of the optical path from the camera



focusing plate to the photographer's eye, and an optical element for compensating for the difference between these two optical paths. The auxiliary prism has an additional entrance for transmitting a beam of light carrying a shutter speed information to the eye of the photographer.

3,800,656

LAUNCHING DEVICE FOR PROJECTILES

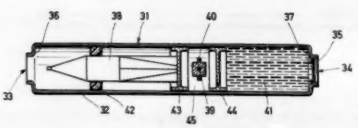
Werner Schnabele, Wolfratshausen, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 4, 1971, Ser. No. 195,686

Claims priority, application Germany, Nov. 13, 1970, 2055805

Int. Cl. F41f *3/02*

U.S. Cl. 89—1.701 **2 Claims**



A launching device for a projectile comprises a barrel having an interior projectile chamber directly adjacent a muzzle opening at one end. The projectile is positioned behind the muzzle opening and is sealed from a propellant chamber directly behind the projectile chamber by means of a sealing member which permits expansion of the propellant chamber during the discharge of the projectile through the muzzle opening. The sealing member moves outwardly along the interior of the barrel, but is maintained in sealing engagement with the barrel to close off the propulsion chmaber even after firing of the missile. In one embodiment, the sealing member comprises a piston which moves along the interior of the barrel and is retained at the outer end thereof by retaining elements formed inwardly at the muzzle opening. In another arrangement, the sealing means comprises a membrane having its outer edges sealed around the periphery of the end of the barrel at the muzzle opening but extending backwardly to envelop the missile and to seal off the remaining portion of the interior of the barrel from the missile at the propulsion chamber. The propulsion chamber may be sealed at opposite sides by a piston arranged on each side of a propulsion charge or means for generating and introducing high pressure gases between the piston at each end. Instead of a piston, the device may comprise a membrane which is engageable with the barrel or even a flexible member in the form of a bellows which is secured to the interior of the barrel and expands outwardly in one or both directions.

3,800,657

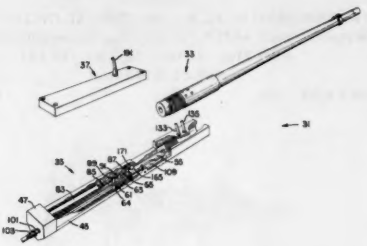
MODULAR LIQUID PROPELLANT GUN

Thomas M. Broxholm, Palo Alto, and Lester C. Elmore, Portola Valley, both of Calif., assignors to Pulsepower Systems Incorporated, San Carlos, Calif.

Filed Jan. 7, 1971, Ser. No. 104,610

Int. Cl. F41f *1/04*

U.S. Cl. 89—7 **14 Claims**



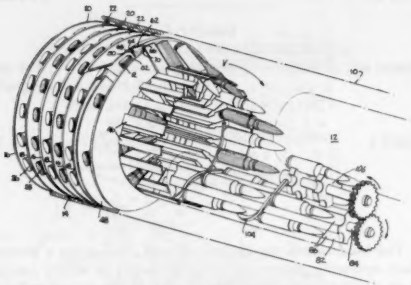
A gun of the kind in which liquid propellant is burned in the firing chamber to fire a projectile from the gun is constructed so that a number of gun modules can be combined in a modular gun. Each gun module is cam controlled, and a common cam is used to control each gun module in the modular gun. The cam can be a flexible cam having a belt configuration to permit the gun modules to be arranged in both circular groupings and in non-circular groupings, such as side by side. The modular gun includes fixed, non-rotating gun modules to eliminate the need for tangential velocity correction factors in the fire control and the need to accelerate the mass of the barrel assembly to operational speed. The individual gun module includes propellant injection mechanism for injecting propellant at high pressure when a non-hypergolic bi-propellant is used as the propellant. One or more hydraulic actuators are used to develop the high injection pressures and to operate other components of the gun, such as the bolt. The hydraulic actuators are also engaged with the cam to interlock the actuators and the controls for the actuators through the cam. A source of pressurized hydraulic fluid independent of the gun is used to power the actuators so that the weight and profile of the gun are kept to a minimum. The hydraulic system includes a compound spool control valve which operates in a dual mode to permit normal cyclic operation of the gun during firing and to maintain the gun in an open bolt condition during armed but non-firing operations. The hydraulic system includes a misfire detection mechanism and module shutdown valve which locks a misfired gun module in the closed bolt condition with the need to depressurize the hydraulic circuits of the other gun modules and without the need to include additional bypass circuits. The injection mechanism for injecting the bi-propellant includes two pistons which are yoked together and operated by a single actuator to inject the propellant into the firing chamber both in metered amounts and in a constant mix ratio. The pistons for injecting the bi-propellant include valves in the pistons, and the pistons are drawn through the fuel on retraction strokes of the pistons. The injection mechanism is retracted away from the firing chamber after the firing of a burst to isolate the propellant in the injection mechanism from the heat of the firing chamber. A rotary lock is mounted closely adjacent the bolt mechanism and engages a relieved area of the bolt in the locked position of the lock so that a quite small force on the lock will hold the bolt mechanism locked against high combustion chamber pressures tending to open the bolt.

3,800,658

AMMUNITION HANDLING SYSTEM

Russell Allyn Hougland, St. George, Vt., and Russell Allyn Houghland, Berwyn, Pa., assignors to General Electric Company, Burlington, Vt.

Filed Jan. 15, 1973, Ser. No. 323,801
Int. Cl. F41f *9/06*
U.S. Cl. 89—33 D **9 Claims**



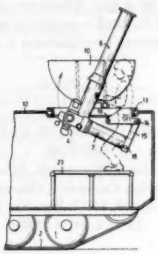
A drum type ammunition storage system has an outer, stationary drum with two, interlayered, helical partitions; and a rotating core with a plurality of longitudinally extending guides, to provide two helical trains of rounds, each having a first rotational velocity, which are merged to provide a single train having a second rotational velocity which is twice said first rotational velocity. The helical partitions are at a longitudinal angle to the longitudinal axis, to support the rounds at an angle to the longitudinal axis.

3,800,659

ARMOURED VEHICLE

Christiaan Kuiper, Eindhoven, Netherlands, assignor to Van Doorne's Aanhangwagenfabriek N.V., Eindhoven, Netherlands

Filed June 22, 1972, Ser. No. 265,176
Int. Cl. F41f *3/04, 23/02, 23/08*
U.S. Cl. 89—40 B **1 Claim**



An armoured vehicle or vessel has a device for launching guided projectiles, such as rockets, with the aid of a training apparatus. A launching tube and the training apparatus are positioned in the interior and under the armour of the vehicle or vessel during normal transport. The holding means for the launching tube is pivotably attached to a supporting means provided under the top of the armour which is provided with an opening that can be shut off.

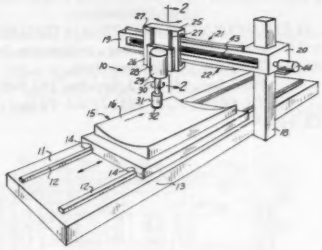
3,800,660

APPARATUS FOR MILLING LARGE RADIUS CURVES

Floyd R. Gladwin, 21000 E. River Rd., Grosse Ile, Mich.

Filed Jan. 2, 1973, Ser. No. 320,106
Int. Cl. B23c *1/16;* **B23d** *1/30*
U.S. Cl. 90—13 R **6 Claims**

Apparatus for milling a large radius curved face on a large metal plate, comprising a horizontally reciprocating table upon which the plate is secured, with a long cross-member extending transversely of the table, and a short slider mounted upon the cross-member for movement transverse of the table, with a rotating milling cutter mounted upon the slider and extending downwardly for milling the face of the plate as it reciprocates beneath the cross-member. Two sets of long tracks are fastened upon and extend along the upper and lower edges of the cross-member, each set having a pair of oppositely curved surfaces vertically aligned with a curved track surface of the other set to form two pair of upper and lower



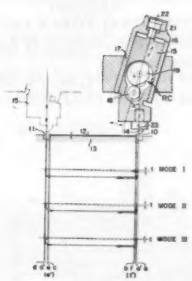
vertically aligned, oppositely curved, i.e., concave and convex surfaces of curvatures corresponding to the curved surface to be formed upon the plate. Corresponding pairs of short, curved surface guide bars are mounted upon the slider, with the bars being transversely movable relative to the slider so as to engage only one pair of vertically aligned track surfaces at a time, whereby the slider is supported for movement along the track surfaces and the slider and cutter may thereby be moved along either a convex or cancave path across the plate for alternatively cutting either a concave or convex face surface upon the reciprocating plate.

3,800,661

APPARATUS FOR CUTTING SIDE SEAL GROOVES IN ROTORS OF ROTARY PISTON ENGINE

Shitomi Omonishi, No. 7-25-2-chome, Yoshijima-Nishi, Japan

Filed Mar. 19, 1973, Ser. No. 342,550
Int. Cl. B23d *5/00, 1/26, 13/06*
U.S. Cl. 90—31 **14 Claims**



Herein disclosed is an apparatus for forming a long groove in a workpiece between relief spaces having such a limited length as barely receives a cutting tool. A method, which is exemplified in the apparatus, cyclically comprises, as customary, the feeding, drawing, quickly returning, depth feeding and inserting steps, but is featured by the manners in which the drawing and inserting operations are carried out. That is, the cutting tool is drawn from one of the relief spaces at a final

stage of the feeding step along a guide line, which is slightly inclined with respect to a line perpendicular to the long groove to be cut, so that the combined angle of drawal is substantially perpendicular to the long groove. And, the cutting tool is also inserted into the other of the relief spaces at a final stage of the returning step along the particular guide line, so that the combined angle of insertion is also substantially perpendicular to the long groove. As a result, a long groove is efficiently produced with acceptable accuracy even if the relief spaces have such a limited length as admits the cutting tool with a limited play in the feeding direction of the cutting tool.

3,800,662

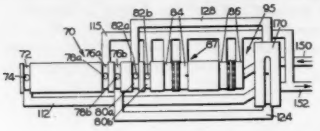
FLUID OPERATED RECIPROCATING MOTOR

Edward L. Ackley, Portland, Oreg., assignor to Ackley Manufacturing Company, Clackamas, Oreg.

Filed Aug. 18, 1972, Ser. No. 281,748

Int. Cl. F01b *25/26*; **F011** *25/04*; **F01b** *11/02*

U.S. Cl. 91—1 **16 Claims**



A fluid operated reciprocating motor for use particularly in driving earth tampers includes a case, a piston mounted for reciprocation in the case, and an actuating hydraulic circuit driving the piston. The circuit includes high and low pressure conduits interconnecting the piston faces with a source of high pressure fluid and a low pressure exhaust line. It also includes a pressure actuatable valve in series in the conduits. The valve includes a valving element shiftable by the application of fluid pressure between first and second positions wherein it directs the flow of high pressure fluid alternately against the respective piston faces. Fluid valve control circuits are present at each end of the piston and are arranged for applying fluid pressure to the valving element at the completion of each piston stroke, for shifting the valving element to a position in which it reverses the piston stroke direction. Damping means are associated with the piston for damping its movement at the end of each stroke preliminary to reversal of the stroke direction.

3,800,663

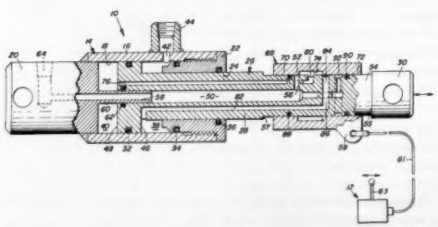
PROPORTIONAL FORCE AMPLIFIER

Ray Clark, Pewaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Dec. 3, 1971, Ser. No. 204,539

Int. Cl. F15b *13/02*, *9/08*, *15/17*

U.S. Cl. 91—49 **6 Claims**



A system for converting a low-force mechanical input to a relatively high force mechanical displacement in a working element on a one-to-one ratio relative to the displacement of the input through the application of a hydraulic power boost.

3,800,664

IMPACT TOOLS OR APPARATUS

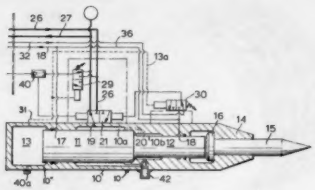
Reginald Andrew Phillips, Warrington, England, assignor to Dobson Park Industries Limited, Nottingham, England

Filed Jan. 18, 1972, Ser. No. 218,671

Claims priority, application Great Britain, Feb. 10, 1971, 4326/71

Int. Cl. F011 *25/00*

U.S. Cl. 91—165 **12 Claims**



The invention is for an impact tool comprising a pressure fluid operating piston and cylinder device in which pressure fluid, for the cyclic operation of said device, is controlled by control means responsive to changes in fluid pressure brought about by relative reciprocatory movement between the piston and cylinder. In one preferred embodiment of the invention said control means comprises a valve means for controlling the supply of pressure fluid to the cylinder, for the retraction of the piston, and for controlling the exhausting of said pressure fluid from the cylinder, for the advance of the piston, a chamber or chambers connected to the cylinder so that a fluid therein will be subjected to pressure changes by movement of the piston, and means responsive to pressures in said chamber or chambers and operative cyclicly to switch said valve means between a pressure fluid supply position and a pressure fluid exhaust position. Conveniently said chamber or chambers is or are connected to the cylinder so that the fluid in said chamber or chambers will be compressed by retraction of the piston. The pressure fluid, for the operation of the tool, may be a liquid and the fluid in the chamber or chambers, which is compressible, may be a gas. Alternatively the pressure fluid, for the operation of the tool, may be a compressible liquid and the fluid in the chamber or chambers a similar compressible liquid.

3,800,665

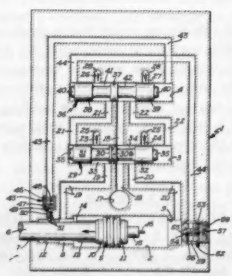
FLUID PRESSURE OPERATED RECIPROCATORY MOTOR

Norbert A. Von Ruden, Claremont, Minn., assignor to Von Ruden Manufacturing Company, Claremont, Minn.

Filed July 27, 1972, Ser. No. 375,735

Int. Cl. F011 *25/06*

U.S. Cl. 91—305 **1 Claim**



Structure including a body having a power cylinder, a reversing valve cylinder and a pilot valve cylinder, a power

piston in the power cylinder and reversing and pilot valves axially moveable in the reversing and pilot valve cylinders respectively. The body defines an inlet port for connection to a fluid pump, and one or more outlet ports for connection to a fluid reservoir. Reciprocatory movement of the power piston is controlled by the reversing valve which in turn is controlled by the pilot valve. Operation of the pilot valve is controlled by a pair of piston operated check valves.

3,800,666

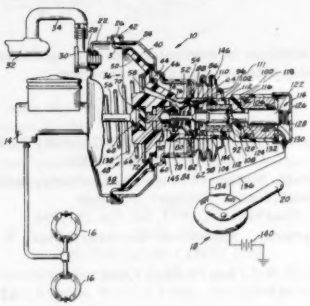
SOLENOID OPERATED SERVOMOTOR

John T. Kasselmann, Southfield, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 12, 1972, Ser. No. 261,873

Int. Cl. F15b *9/03, 13/044*

U.S. Cl. 91—376 **1 Claim**



A servomotor for pressurizing wheel brakes of a braking system in response to an electrical operational signal. The electrical operational signal is created by a series of resistors which proportionally regulate the transmission of operational current to a solenoid. The solenoid will correspondingly exert an operational force through a push rod on a valve to develop the pressurization which will bring a desired rate of deceleration braking to the wheel brakes.

3,800,667

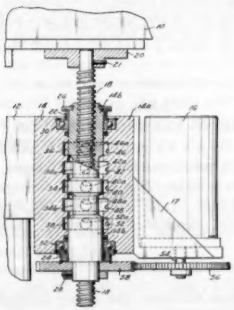
PULSE MOTOR CONTROL SYSTEM

Robert J. Ponter, Glenshaw, Pa., assignor to Ritter Engineering Company, Pittsburgh, Pa.

Filed May 1, 1972, Ser. No. 249,400

Int. Cl. F15b *9/10*

U.S. Cl. 91—380 **3 Claims**



A control means is provided for controlling a hydraulic cylinder to effect translatory movement of a supported load. The control includes a null seeking valve arranged to receive input signals from valve motive means and feedback signals from a load following non-rotating probe. The valve includes a first element which is fixed to provide a reference base and a second element which is operably connected to the non-rotating probe and which moves away from the null position by moving relatively to the non-rotating probe in response to input signals and back to the null position by moving with the probe in response to load-following movement of the probe.

3,800,668

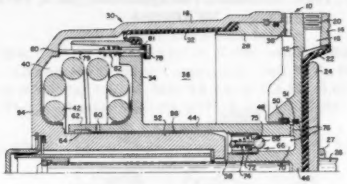
BREATHING AND FAILURE DETECTION SYSTEM FOR SPRING BRAKES

Harry M. Valentine, Elyria, Ohio, assignor to The Bendix Corporation, South Bend, Ind.

Filed Apr. 3, 1972, Ser. No. 240,625

Int. Cl. F01b *25/26, 7/00, 21/02*

U.S. Cl. 91—399 **3 Claims**



A service and spring brake actuator for vehicle brakes including service and spring brake chambers arranged in tandem, the spring brake chamber including a spring cavity and a fluid pressure control cavity and wherein a pair of valves are provided for interconnecting the spring cavity with the service chamber and for interconnecting the control chamber with the spring cavity during operation of the spring brake actuator during spring brake application and release of the brakes in order to prevent the entry of dirt and other foreign matter into the spring cavity. Means are also provided for automatically indicating a failure or loss of load of the main spring and failure or serious leakage of the seal between the control and spring cavities.

3,800,669

CONTROL VALVE ARRANGEMENT FOR A HYDRAULIC DRIVE

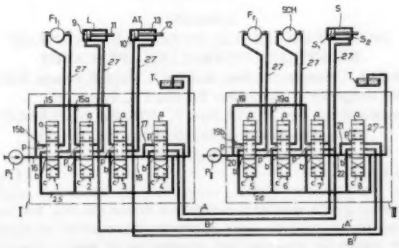
Josef Distler, Lohr/Main, Germany, assignor to G. L. Rexroth GmbH, Lohr/Main, Germany

Filed July 27, 1972, Ser. No. 275,829

Claims priority, application Germany, Aug. 4, 1971, 2138986

Int. Cl. F15b *13/06*

U.S. Cl. 91—411 R **7 Claims**



First and second control units, having first and second control valves, are provided for connecting first and second

pumps with a plurality of hydraulic first and second consumer motors, respectively. The units also include first and second switching valves which can be operated to supply pressure fluid from the respective first or second pumps to the second and first consumer motors, respectively, so that each consumer motor can be also operated with pressure fluid from both pumps.

3,800,670

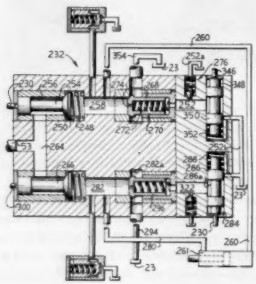
HIGH PRESSURE IMPLEMENT HYDRAULIC CIRCUIT

John L. Hufeld, Peoria; Donald J. Larson, Joliet; Howard A. Marsden, Pekin; James P. Mueller, East Peoria, and William B. Norick, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 868,964, Oct. 21, 1969, Pat. No. 3,575,000, and a continuation-in-part of Ser. No. 814,003, April 7, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,868

Int. Cl. F15b *11/08, 13/042*

U.S. Cl. 91—420 **8 Claims**



A relatively low pressure hydraulic control system for a high pressure work output system in which a control valve is selectively actuated to position a variable displacement axial piston pump to control the flow in the work output system and to position a directional valve which controls the direction of work output. In such a system wherein two work outputs are provided, thereby requiring two control valves, a priority valve may be utilized in the low pressure system so that a signal from one of the control valves will always override a signal from the other control valve in controlling the axial piston pump. A pilot controllable exhaust valve mechanism is disclosed including first and second pilot instrumentalities for opening said exhaust valve mechanism.

3,800,671

DRIVER CIRCUIT FOR SPEEDING RESPONSE OF REMOTELY CONTROLLED APPARATUS

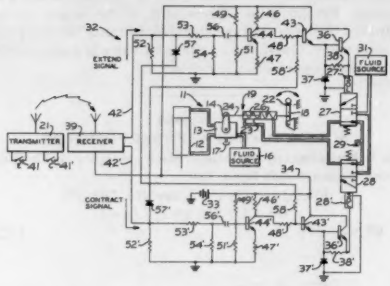
Donald F. Coleman, Dunlap, and Joe E. Fuzzell, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 85,853, Nov. 2, 1970, Pat. No. 3,694,671. This application Aug. 16, 1972, Ser. No. 281,214

Int. Cl. F15b *11/08, 13/043*

U.S. Cl. 91—459 **1 Claim**

A fluid motor system controlled by electrical signals originating at a remote location has driver circuits, for energizing motor control valve solenoids in response to signals, with means for assuring fast termination of motor operation upon termination of a control signal. Upon termination of a signal causing motor operation in one direction, the circuit momentarily actuates the motor in the opposite direction. Capacitive means in the driver circuit undergoes a change of charge condition while a control signal is received and



thereafter produces a momentary reverse operation signal while reverting to the original charge condition.

3,800,672

CLEARANCE ADJUSTING ARRANGEMENT FOR AN AXIAL PISTON MACHINE

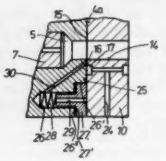
Walter Kobald, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

Filed Sept. 11, 1972, Ser. No. 287,994

Claims priority, application Germany, Sept. 9, 1971, 2145058

Int. Cl. F01b *13/04*

U.S. Cl. 91—487 **12 Claims**



A clearance is formed between the stationary control face of the valve plate and the rotary control face of the cylinder block of an axial piston pump or motor. Part-circular slots in the valve plate are located between two annular narrow sealing face portions which are subjected to great wear. Wide supporting face portions adjacent the narrow sealing face portions, are subjected to lesser wear which causes a high leakage flow. An abrading piston is biased by hydrostatic pressure, or by a spring, against one of the supporting face portions and increases its wear so that the clearance remains constant and leakage is reduced.

3,800,673

WEAR EQUALIZING ARRANGEMENT FOR THE VALVE PLATE OF AN AXIAL PISTON MACHINE

Gerhard Lutz, Faurndau, and Karl Veil, Uhingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 11, 1972, Ser. No. 288,001

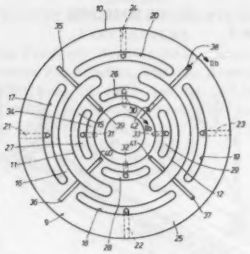
Claims priority, application Germany, Sept. 9, 1971, 2145056

Int. Cl. F01b *13/04*

U.S. Cl. 91—487 **10 Claims**

In an axial piston machine, the rotary control face of the cylinder block slides on the stationary control face of a valve plate which has a pair of part-circular inlet and outlet slots swept by cylinder ports of the cylinder block. Fluid flowing through the slots and leaking between the control faces, con-

tains impurities so that annular sealing face portions of the stationary control face adjacent the slots, tend to be more worn than the annular supporting face portions located radially inward and radially outward of the sealing face portions. Radial grooves, or grooves slanted in the direction of rotation, connect the slots directly with the outer and/or inner supporting face portions so that the impurities produce wear of the supporting face portions, substantially equal to the wear of the sealing face portions, whereby a constant clearance is maintained between the control faces.

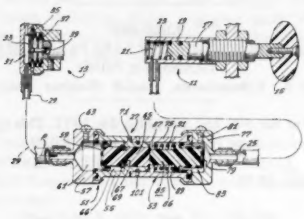


3,800,674

HYDRAULIC COUPLING

Joseph Alexander Sember, Glendale, and Clyde Robert Porter, West Los Angeles, both of Calif., assignors to P. L. Porter Co., Los Angeles, Calif.

Filed Nov. 25, 1969, Ser. No. 879,805
Int. Cl. F01b *19/00, 29/00;* **F15b** *7/00*
U.S. Cl. 92—48 **14 Claims**



A coupling for an hydraulic signal transmission system comprising a male and female portion, each having a plunger actuated diaphragm therein. An O-ring detent is utilized to maintain one of the plungers within its housing and the other plunger may be maintained within its housing by means of a shoulder abutment structure. The male and female housings are maintained in the linked position by means of a quickly releasable spring clip apparatus.

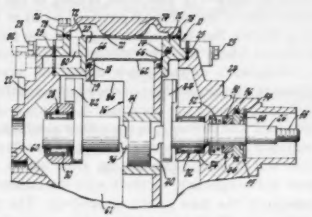
3,800,675

UNITARY PISTON-SUCTION VALVE ASSEMBLY

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,379
Int. Cl. F01b *7/02;* **F04b** *21/04*
U.S. Cl. 92—74 **1 Claim**

A refrigerant compressor including a housing having a compact piston-intake valve assembly mounted for reciprocation within a cylinder bore. The piston-valve assembly is formed from tubular material with its ends covered by a flexible metal inlet valve whose peripheral edge engages the end of the piston. The circular intake valve is spot welded at two diametrically opposite locations to secure the valve to the end of the tubular piston.

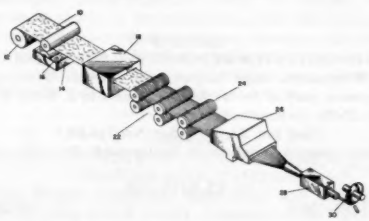


3,800,676

FILTERS

William E. Levers, and Charles H. Keith, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 36,746, May 13, 1970, Pat. No. 3,631,539.
This application Mar. 24, 1972, Ser. No. 237,925
Int. Cl. A24c *5/50*
U.S. Cl. 93—1 C **9 Claims**



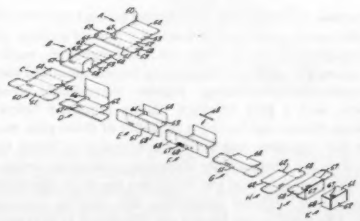
Improved tobacco smoke filters, particularly cigarette filters, are prepared from a web of synthetic polymeric fibers having applied to at least one surface thereof a film-forming derivative of cellulose. Continuous processes and apparatus for the production of the web and filter are also described.

3,800,677

APPARATUS FOR FORMING CARTON

Charles Wright Jones, Los Angeles, and Dwight L. Stetler, South Gate, both of Calif., assignors to Xepex Industries, Inc., Beverly Hills, Calif.

Filed May 3, 1971, Ser. No. 139,399
Int. Cl. B31b *1/06, 1/42*
U.S. Cl. 93—36 DA **17 Claims**



Apparatus for forming a sealable carton for liquids accepts from a supply station a T-shaped blank of sheet material that is

impervious to the fluid that the carton to be formed from the blank is to contain. The blank is pre-scored to represent the sidewalls and ends of the carton, and is further pre-scored to represent flaps by means of which the sealing of the carton is to be effected. One of the sidewall portions is cut in a pattern to produce a liftable flap-like appendage. At the point of introduction of the blank into the apparatus, a series of rolls bend the components of the blank along the several prescorings to assure that the folding of the blank into the form of a carton will occur along the scorings. A conveyor belt then receives the blank and carries it to a position at which a spot of adhesive material is applied to the surface of the flap-like appendage that will be inside the carton, after which a sipping tube or straw is brought into contact with the adhesive to effect attachment of the tube to the appendage. The conveyer belt next brings the blank to a position where overlying relation is established between a marginal portion of one sidewall and a marginal sealing flap of the most distant sidewall, and adhesive interengagement of the overlapping portions throughout tube. lengths is established, to form a tue. Thereafter the conveyer belt brings the tube to an endcapping position where the two ends are folded against marginal sealing flaps of the walls of the tube, marginal sealing flaps of the ends are folded against the outside walls of the tube and adhesive interengagement of all overlapping portions is established, thus producing a fluid-tight carton having as its only access orifice the opening afforded by the flap-like appendage.

3,800,678

APPARATUS FOR REINFORCING BOX BLANKS

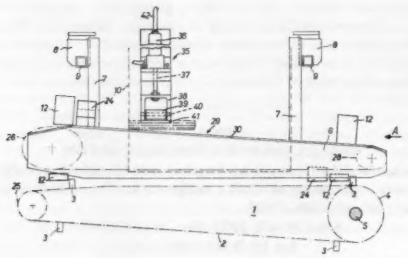
Fritz Wiedemann, Saint Sulpice, and Valentin Gyertyanffy, Lausanne, both of Switzerland, assignors to J. Bobst & Fils S. A., Prilly, Switzerland

Filed Jan. 23, 1973, Ser. No. 326,067

Claims priority, application Switzerland, Jan. 21, 1972, 26597/72

Int. Cl. B31b *1/06*

U.S. Cl. 93—36.6 **10 Claims**



A machine for setting up or erecting boxes from box blanks has a dispensing conveyor formed of a pair of endless chains each supported by a pair of spaced-apart sprockets, each such chain having a plurality of dispensing fingers mounted thereon for dispensing reinforcing blanks individually from a magazine, and a pair of drive chains mounted below the dispensing chains and having a plurality of drive pins secured thereto for engaging and driving a plurality of drive blocks mounted on the chains of the dispensing conveyor chains. The dispensing conveyor and the magazine are both adjustable in their positions without disturbing the driving connection thereto. The reinforcing blanks are dispensed in synchronism with a conveyor which feeds box blanks underneath the magazine, so that one reinforcing blank is dispensed in proper position overlying each box blank.

3,800,679

MACHINE FOR SEALING FOLDING CARTONS WITH ADHESIVE TAPE STRIPS

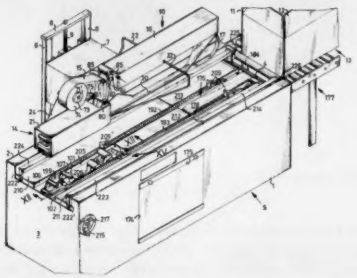
Ehrhard Bartelheimer, Vorm Sonnenbrink, Germany, assignor to Kochs Adler AG, Bielefeld, Germany

Filed June 2, 1972, Ser. No. 259,021

Claims priority, application Germany, June 6, 1971, 2127965

Int. Cl. B31b *1/60*

U.S. Cl. 93—36.9 **12 Claims**



A machine for the automatic bending of the upper flaps of cartons and sealing of the bottom and top of the latter. The machine comprises means for applying adhesive tapes to adjoining faces of the carton. Means for moistening the adhesive tapes are provided, in the form of swivel pressure rollers arranged above and below a conveyor means for the boxes. Cutting means for cutting off tape lengths of tape drawn off from tape reels are disposed in the path of travel of the tapes. A conveyor belt feeds the cartons to the machine. The machine includes means for controlling the introduction of the cartons into the machine and means for moving the cartons through the machine.

3,800,680

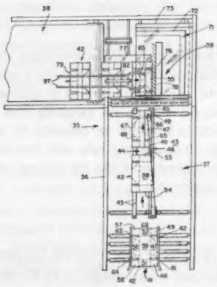
METHOD FOR FOLDING OF TABS IN A RIGHT ANGLE TRANSFER ZONE

Raymond A. Labombarde, Daniel Webster Hwy., Nashua, N.H.

Division of Ser. No. 257,282, May 26, 1972. This application June 27, 1973, Ser. No. 374,028

Int. Cl. B31b *1/52*

U.S. Cl. 93—49 M **3 Claims**



In a right angle paper box blank folding machine the diagonal tabs on the trailing overfolded flaps of successive blanks advanced across the transfer zone into the second flap folding section are backfolded while still in the transfer zone and before they enter the carrier belt nips of the second sec-

tion. Tapered edge tips of resilient folding hooks are cammed upwardly by blanks entering the zone to ride on each blank until it leaves the zone. Upon exiting from under the transfer zone cover the tips hook on the diagonal tabs and backfold them.

3,800,681

APPARATUS FOR ASSEMBLING CARTONS AND LIKE CONTAINERS

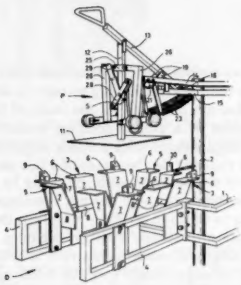
Henry Morgan Corderoy, Sandringham, Australia, assignor to ACI Operations Pty. Limited, Victoria, Australia

Filed Sept. 11, 1972, Ser. No. 287,886

Claims priority, application Australia, Oct. 28, 1971, 6825/71; Dec. 20, 1971, 7470/71; July 20, 1972, 44794/72

Int. Cl. B31b *1/44*

U.S. Cl. 93—51 R **11 Claims**



This specification discloses a carton assembling apparatus comprising blank folding die units having blank end folding members, blank side fold and side or end flap folding members positioned to fold the blank in a predetermined sequence, and a blank pusher which bears on the base of the blank to force same into the die unit, said blank pusher having a blank holding mechanism including blank engaging pads which are brought into contact with the blank when in the folded condition to hold same in place while the adhesive for the blank sets.

3,800,682

APPARATUS FOR MAKING CONTAINERS OF THERMOPLASTIC SHEET MATERIAL

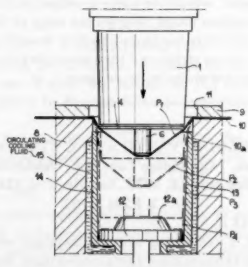
Maurice Paul Gournelle, 1 rue des Bruyeres, Asnieres, Hauts de Seine, France

Filed Sept. 8, 1971, Ser. No. 178,756

Claims priority, application France, Sept. 8, 1970, 70.32547

Int. Cl. B31b *1/28*

U.S. Cl. 93—59 MT **20 Claims**



In making a container with a motif in its surface a sheet of thermoplastic material, printed with a predistorted motif, is heated and held by clamps. The heated thermoplastic material is then forced into a die by a punch provided with a resiliently biased, normally projecting stem which is repressed into the punch upon contacting (through the sheet) the closed end of the die.

3,800,683

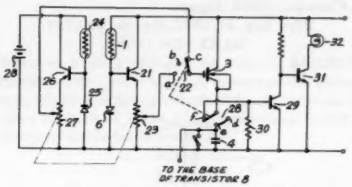
SHUTTER CONTROL CIRCUITRY FOR CAMERAS

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kaisha, Tokyo-to, Japan

Filed Sept. 25, 1972, Ser. No. 291,974

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **15 Claims**



A single lens reflex camera in which a signal corresponding to the intensity of the light at the object which is photographed is interrupted during exposure of film. The circuitry which controls the shutter of the camera has a field effect transistor for storing this latter signal. An erasing circuitry is electrically connected with the field effect transistor for erasing at least part of a signal stored thereby and retained upon closing of a shutter of the camera to complete an exposure.

3,800,684

CONTROL DEVICE FOR AN EXPOSURE METER FOR PHOTOGRAPHIC CAMERAS

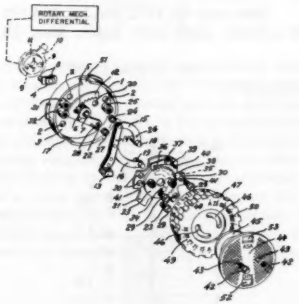
Lennart Ragnar Johansson, Landvetter, and Lave Tenne, Norrbyvallda, both of Sweden, assignors to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Feb. 24, 1972, Ser. No. 229,149

Claims priority, application Switzerland, Apr. 2, 1971, 4295

Int. Cl. G01j *1/00*; **G03b** *19/04*

U.S. Cl. 95—10 C **6 Claims**



This invention relates to photographic cameras provided with a through-the-lens exposure meter adapted for both automatic and manual measurement, in which a differential means in the exposure meter is actuated by a rotational movement, and a rheostat in the exposure meter is set for a resistance value proportional to the total of the correction values of two exposure factors. The invention, more precisely, relates to a control device for actuation of the exposure meter, combined

with means, which upon manual measurement simulate the angle of rotation for adjusting the rheostat, which angle upon automatic measurement is adjusted by the mechanical differential included in the exposure meter. The control device is designed as a so-called control box, which is mounted on the camera exterior and is provided with a control key for actuating the exposure meter and with two knobs having setting scales with indexes for automatic measurement and, respectively, for occurring values of the two exposure factors, the latter used in manual measurement.

3,800,685

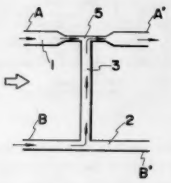
I-SHAPE DUCT

Ryuzo Kitamura, Tokyo, Japan, assignor to Tokyo Gas Co. Ltd., Chuo-ku, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 284,751

Int. Cl. F24f *13/00*

U.S. Cl. 98—32 **5 Claims**



A duct constructed within a building, consisting of an upper and a lower horizontal duct passing horizontally through the building at the upper and the lower part thereof and a vertical duct connecting the upper and the lower horizontal duct within the building having the whole shape of the letter I, and the ducts being structured such that the static pressure in the place where the upper horizontal duct intersects the vertical duct is less than that in the region where the lower horizontal duct does the vertical duct, and an ascending air current is thus generated in the vertical duct by means of the wind.

3,800,686

AIR SUPPLY AND EXHAUST DUCT SYSTEM IN A BUILDING

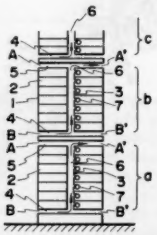
Katsuhiko Otsuka, and Takao Katayama, both of Tokyo, Japan, assignors to Tokyo Gas Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 284,755

Claims priority, application Japan, Mar. 28, 1972, 47-31016

Int. Cl. F24f *13/00*

U.S. Cl. 98—32 **1 Claim**



Air supply and exhaust duct system for a combustion apparatus having upper and a lower parallel ducts passing horizontally through a building at the upper and the lower part thereof and a vertical duct connecting the upper and lower horizontal ducts within the building and having an "I" shape structure.

3,800,687

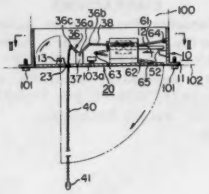
QUICK-ACTING RELEASE FOR A NORMALLY LOCKED LID OF AN EMERGENCY SMOKE DUCT

Kenji Nozawa, Tokyo, Japan, assignor to Ryowa Choon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,140

Int. Cl. E05f *15/20*

U.S. Cl. 98—42 **14 Claims**



A lid is so supported at an open end of an emergency smoke duct as to tend gravitationally to turn to an open position. A lock mechanism mounted on the back of the lid for normally holding same in a closed position includes a spring-loaded latch for engagement with a roller supported on an interior surface of the duct. In the event of a fire the latch is caused to move out of engagement with the roller by the manual pull of a chain extending through the lid, whereupon the lid turns by gravitation to its open position to permit the smoke and gases of combustion to escape through the duct. The latch may be made of magnetic material so that it will be automatically moved out of engagement with the roller upon energization of a solenoid.

3,800,688

METHOD AND APPARATUS FOR PIVOTALLY MOUNTING FLUID DEFLECTION BLADES

Wilbert J. Parrish, Battle Creek, Mich., assignor to United States Register Company, Battle Creek, Mich.

Division of Ser. No. 157,531, June 28, 1971, which is a continuation-in-part of Ser. No. 19,337, March 13, 1970, abandoned. This application Oct. 12, 1972, Ser. No. 296,979

Int. Cl. F24f *13/14*

U.S. Cl. 98—107 **3 Claims**

In an air flow register, a plurality of deflection blades are channeled at their ends to pivotally receive the ends of opposed pivot pins. A plurality of such pins are secured along an elongated support, which, in turn, is either received within a groove of the register frame or grips the edge of the frame. Assembly of the blades is facilitated by first mounting the blades on opposed pivot pin strips and then mounting the assembly of blades and pivot pin strips in the register.

3,800,689

BUILDING VENTILATING SYSTEM

Lester H. Brown, 7439 Indian Lake Rd., Oaklandon, Ind.

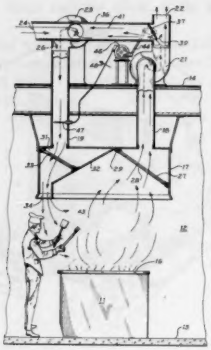
Filed July 24, 1972, Ser. No. 274,324

Int. Cl. F23j *11/02*

U.S. Cl. 98—115 K **9 Claims**

In a kitchen, a ventilating hood is disposed over a cooking unit and has an exhaust duct and a return duct, both extending through the roof to the exterior. An exhaust blower is connected to the exhaust duct and an intake blower to the intake duct, outside the building. A by-pass duct extends from the exhaust blower outlet to the intake blower inlet and a damper in

the duct is responsive to temperature sensed in the intake duct to by-pass a portion of the air handled by the exhaust blower

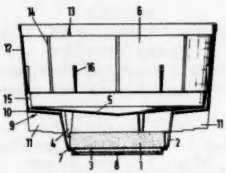


into the intake blower for return through the hood to the area above the cooking unit. Filtering means are provided in the hood.

3,800,690
COFFEE FILTERING

Albert Meijlom Molenaar, Terkaple, and Melle Veenstra, Joure, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabakseabriek-Koffiebranderijen-Theehandel N.V., Utrecht, Netherlands

Filed Dec. 15, 1971, Ser. No. 208,098
Claims priority, application Netherlands, Sept. 7, 1971, 7112303
Int. Cl. A23f
U.S. Cl. 99—295 **5 Claims**



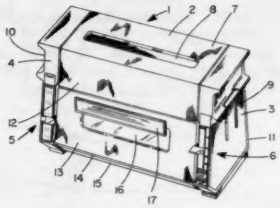
A coffee filtering system having a single percolation, using a compressed coffee tablet in a closely fitting holder.

3,800,691
TOASTER-OVEN

John L. Eaton, Jr., Delanco; Kenneth L. Richard, Newtown Square, and Walter M. Schwartz, Jr., Philadelphia, all of Pa., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.

Division of Ser. No. 60,468, Aug. 3, 1970, Pat. No. 3,669,004.
This application Apr. 6, 1972, Ser. No. 241,571
Int. Cl. A47j *37/08*
U.S. Cl. 99—391 **11 Claims**

A toaster-oven comprising a plurality of readily releasable components including a chassis component, an end panel component and four heating element components. The chassis component comprises a common heating chamber which, having unique venting of the toasting thermostat, receives a vertically positioned, food supporting carriage movable therein in a toast mode from food receiving position to food toasting position and which receives a grill component in horizontal position movable therein in an oven mode from food receiving position to food cooking position. The heating element components are related to the reflecting surfaces of

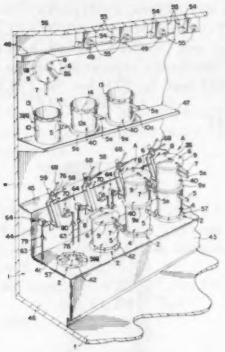


the common heating chamber so that, in conjunction with modulation of the power input to certain of the element components, effective cooking in both the toast and oven modes of operation is obtained. Thus, a readily serviceable and effective multipurpose appliance is disclosed.

3,800,692
APPARATUS FOR FRYING CHICKEN

Robert R. Simens, 296 E. 271st St., Euclid, Ohio

Filed Jan. 14, 1972, Ser. No. 217,789
Int. Cl. A47j *27/14*
U.S. Cl. 99—332 **9 Claims**



An improved cooking system is provided for small restaurants which requires a relatively low investment in equipment and which makes possible a drastic increase in frying capacity for a given number of burner units. Novel double-pot pressure cookers are employed which include a unique pot-extension or collar having an upper lid-receiving portion corresponding to the upper portion of the pot of a conventional pressure cooker and a lower portion corresponding to the marginal portion of the lid of a conventional pressure cooker. The novel process includes apparatus to empty the lower pots rapidly, to filter the hot fat or shortening, and to return the filtered fat to the pots.

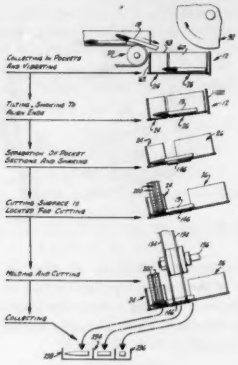
3,800,693
APPARATUS FOR CUTTING ARTICLES

Ralph C. Lent, Lafayette, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Aug. 11, 1971, Ser. No. 170,714
Int. Cl. A23n *15/04;* **A23p** *1/00;* **A47j** *21/00*
U.S. Cl. 99—643 **3 Claims**

Method and apparatus for cutting elongate articles (e.g., asparagus). Articles are collected together, organized into

common lengthwise alignment and then supplied to conveyor means for moving them through successive operating zones. In one zone the articles are shifted to bring like ends into contact



with a reference datum. In another zone cutting means are provided for cutting the articles into parts at one or more locations spaced predetermined dimensions from the reference datum.

3,800,694

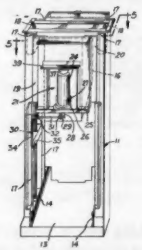
MEANS FOR MOUNTING COMPONENTS OF A REFUSE COMPACTOR IN COORDINATED RELATIONSHIP

Frank E. Miller, and Charles E. Sulcek, both of Danville, Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 8, 1971, Ser. No. 178,605

Int. Cl. B30b *15/14*

U.S. Cl. 100—45 **11 Claims**



A refuse compactor having improved means for mounting elements thereof in coordinated relationship. The compactor includes a frame structure and coordinated means for mounting a ram movably on the frame, a receptacle movably on the frame, and a sanitizing spray means on the frame to be actuated as an incident of movement of the receptacle to and from a compacting position within the frame.

3,800,695

SIDE GAP PRESS AND FRAME STRUCTURE THEREFOR

Finn L. Jonsson, and Sten Trolle, both of Ystad, Sweden, assignors to AB Carbox, Ystad, Sweden

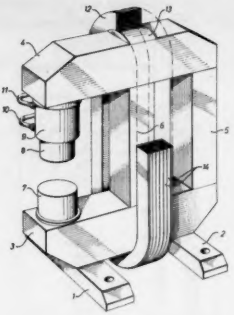
Filed Jan. 19, 1972, Ser. No. 219,004

Claims priority, application Sweden, Nov. 26, 1971, 15213/71

Int. Cl. B30b *1/00*

U.S. Cl. 100—214 **6 Claims**

Two parallel yokes separated by at least one column. The press frame is acted upon by an external frame comprising biased wires or tapes exerting on the column, or a portion adjacent the press tools, a considerably greater compressive pre-



stressing load than that to which column or column portions at a greater distance from the tools are subjected.

3,800,696

APPARATUS FOR MARKING MOVING BARS SUCH AS STEEL RAILS

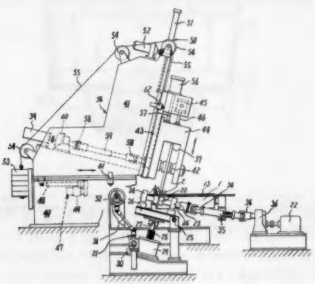
Masaru Goto, and Mitsuo Iso, both of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan

Filed Sept. 28, 1972, Ser. No. 293,074

Claims priority, application Japan, Oct. 22, 1971, 46-83817

Int. Cl. B41f *17/08, 17/26*

U.S. Cl. 101—6 **5 Claims**



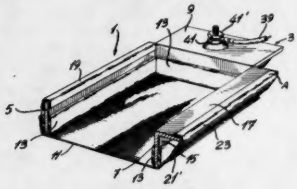
Apparatus for applying marks to a surface of a bar, such as a railroad rail, which is moving along a conveyor. The bar is guided to pass between a supporting disc positioned to engage a surface of the bar opposite to the surface to be marked and a stamping disc positioned so as to be engageable with the surface to be marked, and both discs are separately driven at a peripheral speed equal to the linear speed of the moving bar. At the proper time, the stamping disc is pressed into engagement with the surface of the bar. The positions of the supporting and stamping discs are adjustable vertically, laterally and angularly with respect to the path of movement of the bar so that a marking operation can be performed on bars of various sectional configurations.

3,800,697

ELECTRICALLY HEATED PRINTING SCREEN CONSTRUCTION

Carl Sullivan, 9213 LaSalle Blvd., Ville La Salle, Quebec, Canada

Filed Apr. 28, 1972, Ser. No. 248,733
Claims priority, application Canada, Dec. 23, 1971, 131066
Int. Cl. B41n 1/24; H05b 3/34; H01b 17/26
U.S. Cl. 101—128.1 5 Claims



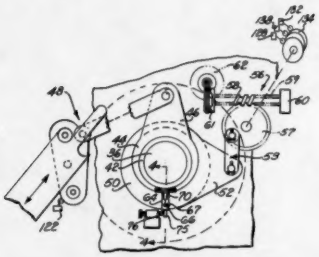
A printing screen construction to be electrically heated and formed of a metallic frame defined by two opposed side members and two opposed end members, the construction including a metallic printing screen extending across the frame over the lower edges of the members with electrical insulating material interposed between the screen and the frame. One side member of the frame is an angular element having a vertical flange and a horizontal flange, the latter projecting horizontally outwardly away from the top edge of the vertical flange. A strip fastener is electrically insulatingly connected to one side edge of the screen, the fastener having a generally U-shaped cross-section and being applied over the outer edge of the horizontal flange with one leg lying flat over the top surface of the horizontal flange and with the other leg being inclined with respect to the top surface and extending toward the said one side edge of the screen. The other edges of the screen are electrically insulatingly secured to the frame and the screen is connected to an electrical circuit.

3,800,698

DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS

Karl E. Kist, Strongsville, and Donald F. Elmore, Dayton, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation of Ser. No. 85,131, Oct. 29, 1970, abandoned.
This application June 28, 1973, Ser. No. 374,533
Int. Cl. B41f 7/06, 13/28
U.S. Cl. 101—137 23 Claims



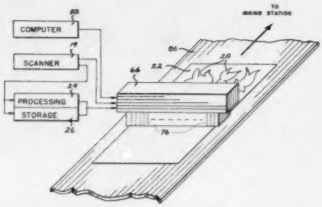
A disconnect arrangement for individual units of a multi-unit press in which the throw-off eccentrics and the stock-thickness adjustment eccentrics for the blanket cylinder are selectively interconnected for simultaneous operation to impart additional throw to the blanket cylinder to shift the blanket cylinder out of mesh with the driving gear. A timing gear train and a single position clutch assure re-engagement of the blanket cylinder in the proper timed relationship. Means are disclosed for returning the stock thickness mechanism to its original setting upon re-engagement of the blanket cylinder.

3,800,699

FOUNTAIN SOLUTION IMAGE APPARATUS FOR ELECTRONIC LITHOGRAPHY

Adam Loran Carley, 45 Linnaean St., Cambridge, Mass.

Division of Ser. No. 46,935, June 17, 1970, Pat. No. 3,741,118.
This application Mar. 1, 1973, Ser. No. 337,124
Int. Cl. B41l 25/12, 25/06
U.S. Cl. 101—147 1 Claim



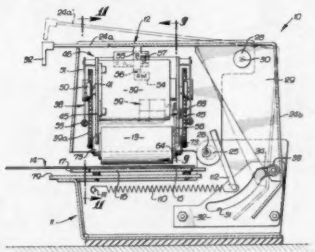
A method and apparatus for printing an image in scanned electronic form on an ink receiving surface using ordinary printer's ink. The method and apparatus employ quasi-lithographic techniques and equipment, but unlike conventional lithography, the method does not require the preparation, prior to the printing process, of a lithographic plate containing in permanent form the image to be printed. The scanned electronic image is used to form a fountain solution image on a lithographically blank plate by the selective deposition and/or removal of the fountain solution from the plate. Lithographic ink is applied to the fountain solution imaged plate and then transferred to an ink receiving surface, such as paper or an offset blanket. Thereafter, the lithographically blank plate is cleaned and ready for the formation of the same or a different fountain solution image.

3,800,700

MULTIPLE SHEET IMPRINTING APPARATUS

Andrew M. McInnis, Covina, and Dunstan P. Sheldon, Altadena, both of Calif., assignors to Sheldon Industries Inc., Monrovia, Calif.

Filed Sept. 18, 1972, Ser. No. 290,168
Int. Cl. B41f 3/04
U.S. Cl. 101—269 18 Claims



An imprinter includes a head section closable toward a base section on which have been placed multiple sheets to be imprinted. When the head is locked in down position, a pressure roller carried by the head section travels relatively along and over stacked sheets to pressurize them alternately between the roller and indicia on the base, and between the roller and a rail on the base, and in a manner to prevent uncontrolled smudging of the sheets near the indicia, and to accept controlled smudging over the rail.

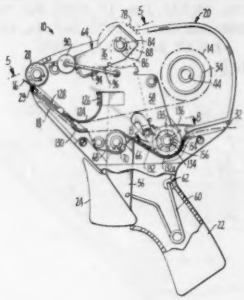
3,800,701
MERCHANDISE MARKING GUN

William Martin, Campbell, Calif., assignor to Uniline Corporation, Union City, Calif.

Continuation of Ser. No. 134,346, April 15, 1971, abandoned. This application May 18, 1973, Ser. No. 361,480

Int. Cl. B41f *1/08*

U.S. Cl. 101—288 **9 Claims**



A marking gun for printing adhesive labels with pricing and the like having a printing head connected to an operating trigger for impressing the labels, and a drive wheel linked to the operating trigger by a ratchet and pawl assembly for incrementally advancing the labels carried on a backing tape by engaging radial drive teeth on the drive wheel into perforations in the backing tape after the pre-cut adhesive labels have been impressed by the printing head and separated from the backing tape.

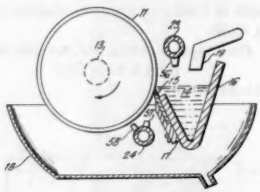
3,800,702
INKING APPARATUS HAVING AUTOMATIC WASH-UP MEANS

Lawrence Roberts, Huntington Beach, Calif., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Dec. 7, 1972, Ser. No. 311,705

Int. Cl. B41f *35/04*; **B41l** *41/04*

U.S. Cl. 101—425 **11 Claims**



An inking unit, including an ink fountain formed between an inking cylinder and a scraper type doctor blade, is provided with an automatic wash-up system. The latter includes spray pipes having nozzles that direct cleansing and rinsing fluids against the ink engaging elements. Much of these cleansing and rinsing fluids are recirculated to prevent waste, with recirculating being effected by the same pump that delivers ink to the reservoir from which ink is supplied to the fountain.

3,800,703
EXPLOSIVE ENCLOSURE APPARATUS

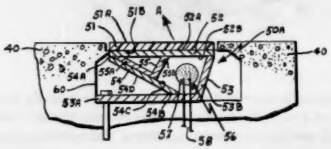
Robert E. Murakami, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1973, Ser. No. 343,316

Int. Cl. F42d *3/00*

U.S. Cl. 102—1 R **2 Claims**

An apparatus which, in a plurality of similar and suitably positioned preferred embodiments, can be adapted for the particular function of removing debris, such as nuclear attack ejecta, from an area, a surface, and the like, such as the top surface of a Minuteman missile silo which is openable and is closeable by a closure that is in the closed mode at the time of the removal of the debris. A representative preferred embodiment of the inventive explosive enclosure apparatus comprises: a first cover made of ablative material; a second cover below of, abutting with, and attached to, the first cover; a first "L"-shaped component, a rectangularly-shaped solid member, a second and smaller "L"-shaped component (i.e., a directional offset component), all three of which are suitably disposed below the second cover; and explosive train located below the second cover and bounded in part by the directional offset component; and, a housing to contain the second cover, the first and second



"L"-shaped components, the rectangularly-shaped member, and the explosive train. If a plurality of the inventive enclosures are suitably disposed adjacent to the missile silo closure, and if the explosive train is initiated and the explosive charge within the inventive apparatus is subsequently detonated, the first and second covers are blown off. The movement of said covers is upwardly and away from the missile silo launch tube, because of the directional offset, thereby precluding the covers from falling back in close proximity to the original location, and thereby simultaneously removing any debris which is near and/or is adjacent to the missile silo closure. The closure can then be moved to the open mode without the danger of any debris falling into the launch tube; and, therefore, the missile may be timely and safely launched.

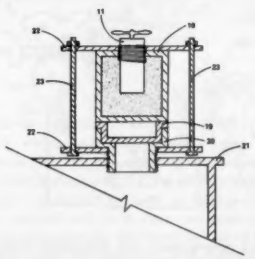
3,800,704
ARMING AND FUSING ADAPTER

Robert G. S. Sewell, China Lake; Carl C. Austin, Inyokern; Carl C. Halsey, China Lake, and Myron R. Smith, Lone Pine, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,808

Int. Cl. F42b *25/14*

U.S. Cl. 102—6 **1 Claim**



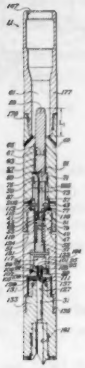
A barrel of inflammable or shock sensitive liquid is turned into a bomb by attaching an arming and fusing adapter.

3,800,705

PRESSURE BALANCED PERCUSSION FIRING SYSTEM

Jack W. Tamplen, R.R. 2, Celina, Tex.

Filed Mar. 30, 1973, Ser. No. 347,324
Int. Cl. E21b 43/116
U.S. Cl. 102—20 38 Claims



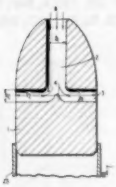
Percussion firing apparatus for firing an explosive charge in a downhole tool without using an electrical system characterized by a chamber and a pressure balancing piston and including a percussion firing head assembly that is set in the well and, on a subsequent trip, a firing prong employed to move the pressure balancing piston downwardly to arm and ultimately fire via a firing pin a charge. After the charge is fired the entire percussion firing apparatus is pulled from the well. The apparatus provides consistent firing regardless of internal and external pressures of variations therein, or of the fluids in the well. Also disclosed are positive safety features; such as, running the percussion firing head assembly with the firing pin disarmed, and a single-fire safety construction that allows only one firing attempt; as well as other advantageous features and specific structure and assembly.

3,800,706

PROJECTILE FOR TRAINING AMMUNITION

Heinz Gawlick, Furth; Arthur Schatz, Stadeln, and Heinz Mothes, Geyen, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 30, 1971, Ser. No. 203,401
Claims priority, application Germany, Oct. 7, 1971, 2149977
Int. Cl. F42b 13/20, 15/14
U.S. Cl. 102—92.7 59 Claims



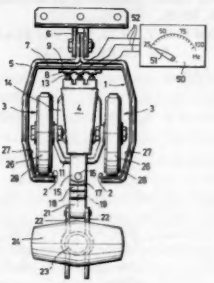
Training ammunition in the form of a projectile having spin braking means arranged in the front part thereof. The spin braking means includes a central bore extending from the tip of the projectile partially therethrough with the rear portion of the central bore being in communication with the outer surface of the projectile via discharge channels arranged about the central bore. The rear portion of the central bore is provided with a deflecting lobe having a cross section which increases rearwardly for directing the air flow into the discharge channels in order to minimize turbulence in the air flow. The central bore and discharge channels operate in the manner of a rotary compressor with radial rotors in that air flow therethrough during the flight of a spin stabilized projectile effects braking of the projectile in a predetermined manner to reduce the flight range of the projectile. With known flight characteristics of a projectile, the cross-sectional size of the central bore and discharge channels can be selected to produce a predetermined braking effect and a predetermined flight range for the projectile.

3,800,707

OVERHEAD CONVEYOR INSTALLATION

Horst M. Hermann, Ulmenstr. 18, 7034 Maichingen, Germany

Filed Apr. 19, 1972, Ser. No. 245,320
Int. Cl. B61b 3/02
U.S. Cl. 104—94 8 Claims



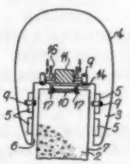
An electrically powered overhead conveyor system for a series of suspended load-carrying carts consists of a number of drive assemblies to suspend the carts in rolling engagement with a hollow rail having a cross-section resembling an inverted U which encloses the drive assemblies, and at least one drive assembly for each cart includes a driving motor which is entirely contained within the hollow rail.

3,800,708

TRACKED VEHICLE AND SUSPENSION SYSTEM

Christopher Durrant English, Burwell; Brian Robert Fuller, Duxford; Geoffrey Edward Bone, Crookham; Peter Douglas Bishop, Wokingham, and Eric James Birchnall, Bracknell, all of England, assignors to Tracked Hovercraft Limited, London, England

Filed Oct. 18, 1972, Ser. No. 298,532
Claims priority, application Great Britain, Oct. 20, 1971, 48858/71
Int. Cl. B60l 13/00
U.S. Cl. 104—148 LM 9 Claims



In a vehicle propelled by a linear induction motor along a prepared track in which the stator of the motor is carried by the vehicle for co-operation with a reaction rail extending

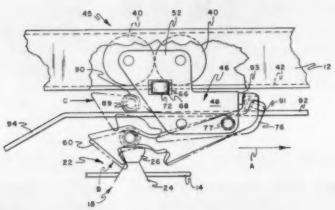
along the track, the stator is connected to the vehicle body by pairs of hydraulic rams arranged to act in parallel. One ram of each pair is arranged to exert a substantially constant force on the stator and the other ram of each pair is servo controlled to act with or against the constant force ram to maintain a predetermined operating gap between the stator and the reaction rail. The constant force is preferably equal to a suitably chosen mean value of the load exerted by the stator due to its weight plus or minus electro-magnetic forces exerted thereon. The servo controlled rams are preferably arranged to exert a force substantially equal to the difference between the constant force and the instantaneous value of a variable force required to be applied to the stator to maintain its desired position. Actuators other than rams may be employed and they may be arranged to control the position of structure other than linear induction motor stators associated with the vehicle, for example, bogies.

3,800,709

TROLLEY DRIVE FOR OVER AND UNDER CONVEYOR

Maynard J. De Good, and Wendell G. Champion, both of Grand Rapids, Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Filed Feb. 7, 1972, Ser. No. 224,173
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **12 Claims**



The main propelling member is mounted on an overhead power track for selected driving engagement with carriers suspended by trolleys on the free track. The propelling member has a depending puller arm with a socket forming integral puller and holdback dogs engageable with a drive post on the carrier. The upper surface of the socket is irregular with the depth of the holdback dog being less than that of the puller dog portion. A smooth curvilinear shape inhibits accidental disengagement during transistion between levels and inclined movement and assures straight-line force generation between the drive post and drive arm pivot pin when the holdback dog is utilized. An auxiliary pusher arm is also utilized for switching the carrier from one free track to the other and is urged by its own weight into a retracted non-post engaging position. Ramps are positioned for positive cam movement of the auxiliary pusher arm for engagement with or disengagement from a secondary drive post.

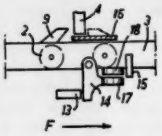
3,800,710

STOPPING STATIONS OF A POWER AND FREE CONVEYOR

Jean Raoulx, Vaires, France, assignor to Jervis B. Webb International Company, Detriot, Mich.

Filed Jan. 22, 1973, Ser. No. 325,951
Claims priority, application France, Jan. 31, 1972, 72.03180
Int. Cl. B61h *9/00*; **B65g** *17/42*
U.S. Cl. 104—251 **5 Claims**

A stopping station for a power and free conveyor in which the main dog of a carrier on a carrier track is retracted and disengaged from a pusher on a propelling chain by a stop plate movable between stopping and non-stopping positions. Forwarding movement of the carrier is arrested by the combination of a fixed laterally extending abutment on the carrier, a pivoted abutment mounted on the carrier track and engageable by the carrier abutment, a fixed abutment mounted on the carrier track and spaced from the pivoted abutment in the forwarding direction of carrier movement, and a blocking device movable with the stop plate. In the stopping position, the blocking device is interposed between the pivoted and fixed track-mounted abutments and prevents the pivoted abutment from moving when engaged by the carrier abutment.

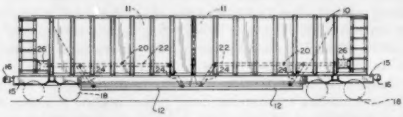


3,800,711

HOPPER CAR DOOR ACTUATING MECHANISM

James H. Tuttle, Warsaw, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 9, 1972, Ser. No. 261,203
Int. Cl. B61d *7/02, 7/18, 7/21*
U.S. Cl. 105—251 **5 Claims**



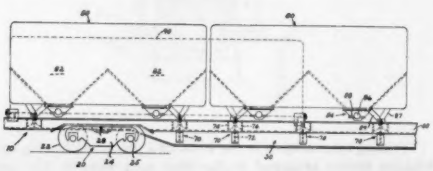
A railway hopper car having longitudinally extending discharge doors arranged in pairs and operable in response to fluid motor actuation of a lever system. A four bar linkage mechanism interconnects each pair of associated doors in such a manner as to provide sequential opening and closing of the hopper doors and the door connecting link members are positioned to provide an over-center locking feature to the doors when rotated into the closed position. One door of each pair includes a lip portion which overlaps the associated door to provide support and improved sealing when the doors are in a closed position.

3,800,712

RAILROAD CAR FOR TRANSPORTING CONTAINERS

John A. Krug, Jr., St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,462
Int. Cl. B65j *1/22*; **B60p** *7/08*
U.S. Cl. 105—366 D **5 Claims**



This disclosure is directed to a railroad car having means mounting hopper type containers on the car in such a manner

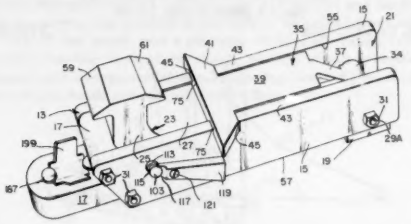
that they may be unloaded while on the car. The car also includes mounting means for transporting standard containers on the car, preferably on pedestals. Support structure on the car has been designed to minimize car weight.

3,800,713

SELF-ERECTING CARGO PALLET LOCK

Arnold B. Nordstrom, 3855 Paseo de las Tortugas, Torrance, Calif.

Filed Jan. 18, 1973, Ser. No. 324,828
Int. Cl. B60p 7/08; A44b 21/00; B65j 1/22
U.S. Cl. 105—369 A 16 Claims



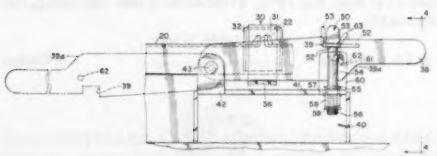
A cargo pallet lock for use in vehicles such as aircraft, trucks, ships, and the like, is described. The lock is used to secure load supporting members or pallets to accommodating floor structures in the vehicles and includes a T-headed pallet-engaging lock post which is slidably mounted in a body member and is securable to the vehicle floor structure. The lock post is biased toward an elevated end position from a recessed end position and the device also includes latch-release means for releasably holding the lock post in its recessed position after the member has been retracted by manual operation of a retract lever. Upon being released, the lock post snaps to its elevated position where horizontal load forces incident thereon are transferred by novel structure to the body structure of the lock.

3,800,714

TROUGH HATCH LOCKING DEVICE

Marvin Stark; Jerry L. Jones, both of Michigan City; Richard L. Tuck, Sr., Highland, and Herman A. Aquino, Hobart, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 31, 1972, Ser. No. 285,149
Int. Cl. B61d 39/00
U.S. Cl. 105—377 8 Claims



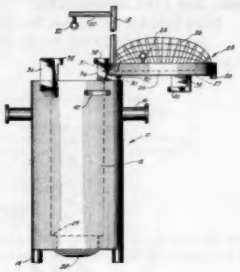
A hatch cover locking device having a hinged strap pivotally attached to overlap the adjacent end portions of adjoining trough hatch covers and having a free end which is engaged by a locking bar which has a locking notch portion into which locking finger of a rotating lock bolt moves to restrain the locking bar in the latched position.

3,800,715

BOMB RECOVERY AND SHIELD APPARATUS

William A. Boller, 1455 Enderly Way, Mountain View, Calif.

Continuation-in-part of Ser. No. 185,301, Sept. 30, 1971, Pat. No. 3,721,201. This application Feb. 28, 1973, Ser. No. 336,612
Int. Cl. E06b 9/00; E05g 3/00
U.S. Cl. 109—49.5 22 Claims



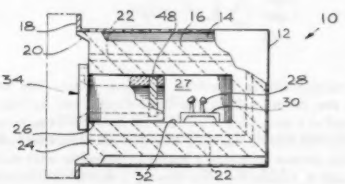
Bomb recovery and shield apparatus includes a cage shaped to slip over a bomb, and a clip in the cage adapted to engage the bomb and retain it inside the cage. A lead line attached to the cage is used to pull the bomb into an explosion-resistant, open-ended tubular shell. A lid having a shrapnel-capturing wire rope screen covers the top opening of the shell. A post extending above the top opening of the shell supports a pulley, and the lead line is reeved over the pulley prior to its attachment to the cage. A workman standing a safe distance from the bomb pulls the lead line to slip the cage over the bomb and thereafter guides the bomb toward the shell. The bomb is guided into the opening at the bottom of the shell by a guide system in the shell which includes a second pulley attached to a ring and detent pin releasably supported in the bottom of the shell. The lead line passes through the interior of the shell and is reeved over the second pulley. A fixed lead rod extends lengthwise through the interior of the shell, and the ring of the detent pin is disposed around the lead rod. The bomb and cage are drawn into the open bottom of the shell, and continued pulling on the lead line causes the detent pin and ring to release from their support and slide lengthwise upwardly along the guide rod, thereby allowing the bomb to be guided safely along the guide rod into the interior of the shell.

3,800,716

FURNACE CLOSURE

Robert P. Berger, 17110 Clemons Dr., Encino, Calif.

Filed Feb. 16, 1973, Ser. No. 333,060
Int. Cl. F23m 7/00
U.S. Cl. 110—173 R 8 Claims



A closure for a high-temperature furnace such as a muffle kiln is disclosed. The closure is formed of a hollow, elongated member, the rearward end of which supports a high-temperature resistant window such as a quartz panel, and the forward

end of which forms a closure seal with the outer surface of the muffle while permitting visual monitoring of the interior of the furnace. The recess of the window decreases the effective volume of the furnace which permits more rapid heating of the furnace to processing temperature and more even control of the furnace at peak temperature.

3,800,717

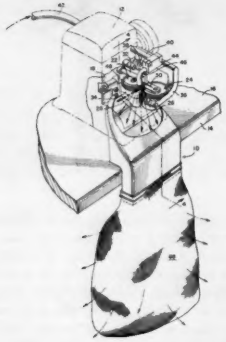
ATTACHMENT FOR FUR SEWING MACHINES

Fred L. Olday, Box 1255, Scranton, Pa.

Filed Feb. 16, 1973, Ser. No. 333,340

Int. Cl. D05b *23/00, 35/00, 81/00*

U.S. Cl. 112—20 **7 Claims**



A loose hair collecting attachment for fur sewing machines employing an air jet for deflecting fur from between fur skin strips in advance of stitched seam formation. A chute, specially designed to optimize the collection of loose hair particles, is mounted on the machine and is operative to convey the particles to an air pervious sack or receptacle. The chute may be provided with an air jet assist or may be used in conjunction with a vacuum cleaner.

3,800,718

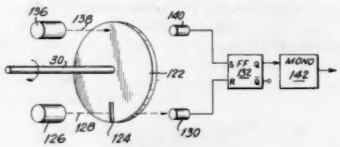
POSITION SENSOR FOR CARPET-TUFTING MACHINES

Harold L. Johnson, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 1, 1971, Ser. No. 185,734

Int. Cl. D05c *15/10*

U.S. Cl. 112—79 R **3 Claims**



A carpet-tufting machine position sensor for indicating when the carpet-tufting machine needle bar arrives at or is stopped at a preselected position in its cycle of movement and wherein the needle bar may shake or oscillate thereabout. The position sensor includes a member movable with said needle bar, said movable member having a machine-readable marking; a second reader for reading said marking when the needle bar is in said preselected position; and a first reader for reading the said marking when said needle bar is in a range of its movement other than said preselected position and an adjacent region defined by the maximum displacement of said movable member during maximum parasitic oscillations of the needle bar; and a signal generator connected to the first and second readers for providing a signal only after said second reader has read said marking following an initial reading thereof by said first reader. The indicating transducer thereby provides a single signal when said needle bar initially arrives at said preselected position and ignores subsequent irrelevant arrivals of said needle bar at said preselected position due to uncontrolled oscillations of the needle bar thereabout.

3,800,719

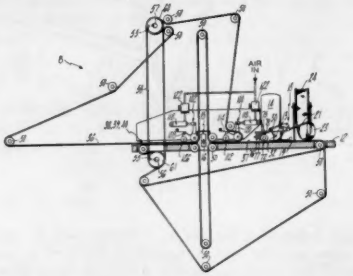
SEWING MACHINE MATERIAL FEED MECHANISM

John L. Rockerath, Utica, N.Y., assignor to Jetsew, Inc., Barneveld, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,587

Int. Cl. D05b *27/00, 27/16*

U.S. Cl. 112—203 **3 Claims**



A sewing machine installation for sewing a shirt front box hem having material handling apparatus for preassembling the shirt front and a material feed mechanism with pairs of cooperating upper and lower conveyor belts for feeding the shirt front. Certain conveyor belts are driven at different speeds to compensate for different effective feed rates of the material through the material handling apparatus and pneumatically operated pressure rolls are provided for urging the conveyor belts together for positively gripping the shirt front material. In one embodiment additional drive rolls are provided adjacent the sewing station for assisting in feeding the material through the sewing station and in a second embodiment the upper and lower conveyor belts convey the material through the sewing station and air arcuate conveyor belt support plate is provided at the sewing station for ensuring positive gripping of the material.

3,800,720

PRESSURE FOOT FOR SEWING MACHINES

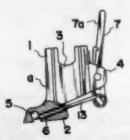
Kumao Niino, Tokyo, Japan, assignor to Koshin Seimitsu Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1973, Ser. No. 344,923

Claims priority, application Japan, Apr. 5, 1972, 47-39442(U); Apr. 12, 1972, 47-42405(U); Dec. 20, 1972, 47-145448(U)

Int. Cl. D05b *29/00*

U.S. Cl. 112—235 **4 Claims**



This invention relates to a pressure foot for sewing machines having a pressure foot bar.

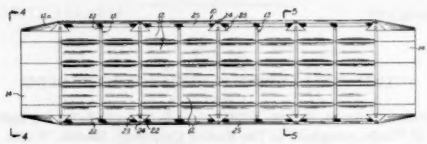
Said pressure foot for sewing machines comprises a shank detachably connectable to the sewing machine pressure foot bar, a lever pivotally connected to a pair of lugs, a wire connected at its base to the lower end of said lever and movably extending through a longitudinal bore so that its forward end portion projects into a transverse slot, means normally urging said wire to close at its front end portion the open side of said transverse slot, and a pressure shoe having a pair of supports extending along opposite sides of the upper surface of the shoe for supporting a shaft extending transversely of the shoe and adapted to be received in said transverse slot formed in said shank and retained therein by the forward end portion of the wire closing the open side of the transverse slot.

Said shank is formed with a vertical groove at one side thereof for receiving the pressure foot bar therein and having said transverse slot formed at the bottom to extend from side to side of the shank and a plurality of lugs extending rearwardly from the back of the shank, and the shank is further formed with a longitudinal bore extending forwardly from the back of the shank and opening in said slot.

3,800,721
BARGE

James Clifford Taylor, Calgary, Alberta, Canada, assignor to Dominion Bridge Company Limited, Quebec, Canada

Filed Apr. 2, 1973, Ser. No. 346,956
Claims priority, application Canada, Jan. 16, 1973, 161329
Int. Cl. B63g *35/00*
U.S. Cl. 114—.5 F **7 Claims**



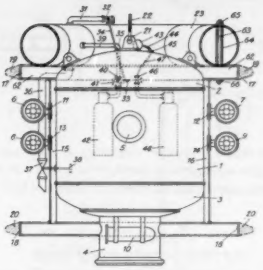
A barge has a plurality of parallel tubular pontoons connected together at longitudinally spaced planes by a set of transverse beams. Each beam is of integral construction and includes transversely aligned bulkheads within the pontoons and beam web plates on the outside of the pontoons in alignment with the bulkheads, the beam web plates of adjacent pontoons being secured together. The pontoons have closed, tapered end portions covered by deck plates, but between the deck plates at the ends, the deck of the barge is open. The bulkheads separate each pontoon into a plurality of watertight compartments.

3,800,722
SELF-PROPELLED, CABLE-SUPPORTED DIVING BELL

Alain M. Lepage, Marseille, France, assignor to Compagnie Francaise Des Petroles, Paris and Compagnie Maritime D'Expertises, Marseille, both of, France

Filed Sept. 28, 1971, Ser. No. 184,432
Claims priority, application France, Mar. 8, 1971, 71.07865
Int. Cl. B63g *2/00*
U.S. Cl. 114—16 R **4 Claims**

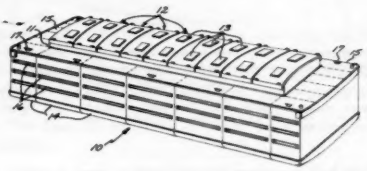
A diving bell is provided with a toric ballast tank having thin polyvinyl chloride walls. A source of compressed air and various valves are connected to the tank to control its buoyancy. Propellers are arranged on the sides of the bell to provide horizontal mobility. A control circuit measures the water level in various compartments to insure precise control of the bell's buoyancy.



3,800,723
BARGE

John W. Collins, 7111 Starlight Cir., Huntington Beach, Calif.

Filed Mar. 21, 1972, Ser. No. 236,727
Int. Cl. B63b *35/28*
U.S. Cl. 114—26 **5 Claims**



The present invention relates to a barge, a barge structure, and to novel hatch-covers that cover the cargo-hold; the disclosed hatch-covers being stackable atop each other for compactness when the barge is being loaded or unloaded.

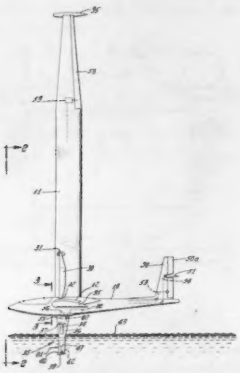
3,800,724
WINGED SAILING CRAFT

Richard R. Tracy, 711 Ocean Ave. No. 405, Huntington Beach, Calif.

Filed June 8, 1972, Ser. No. 260,891
Int. Cl. B63h *9/04*
U.S. Cl. 114—39 **14 Claims**

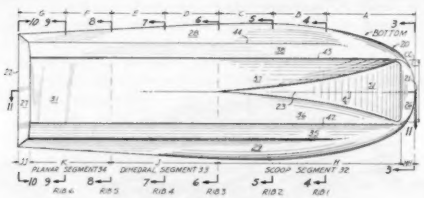
A sailing craft comprises:
a. a body, and
b. first and second elongated wings carried by the body, the first wing extending generally upright and the second

wing extending generally laterally at one side of the body, both wings having airfoil configuration to receive wind



thrust developing mutually counteracting roll moments as well as propulsion force acting on the upright wing.

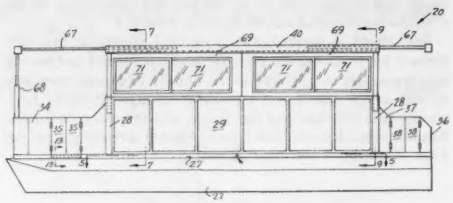
3,800,725
BOAT HULL
Roland J. L'Heureux, 509 S. Columbia Rd., Arcadia, Calif.
Filed Mar. 30, 1973, Ser. No. 346,276
Int. Cl. B63b *1/06*
U.S. Cl. 114—56 **15 Claims**



A boat hull having a forward axis, a bow, a stern, two sidewalls, a transom wall, and a bottom wall. The bottom wall is formed in three segments: a scoop segment, a dihedral segment, and a planar segment in that order from the bow. The segments merge into one another. The scoop segment provides a scoop of decreasing cross-section area extending downwardly and rearwardly toward the dihedral segment, which dihedral segment has a central dihedral angle opening toward the bottom. The segments are defined by two pairs of runner faces that form dihedral angles which open upwardly, and the scoop segment is additionally defined by a scoop face which interconnects the innermost members of the pairs of runner faces.

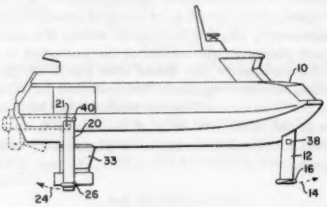
3,800,726
PONTOON HOUSE BOAT
Reuel A. Murphy, 8181 Folsom Blvd. No. 149, Sacramento, Calif.
Filed Oct. 5, 1972, Ser. No. 295,127
Int. Cl. B63b *35/34*
U.S. Cl. 114—61 **5 Claims**

A pontoon house boat supported on a pair of spaced parallel hollow pontoons provided with a plurality of water tight compartments. The pontoons are formed of aluminum and have a plurality of spaced parallel transverse aluminum cross members welded thereto to support the floor of the house boat, the bow section, and the steering section. Side and end walls are supported by upright hollow posts extending upwardly from the deck and a roof panel is supported on posts which telescope into the aforementioned posts to move the roof up and down as required. Hinged panels are connected to the roof section to drop into place to close the side and end walls with the roof in its uppermost position. Doors give access



to the enclosed space from the bow section and from the stern steering section with bow section and steering section being covered by a telescopic roof which slides horizontally to extended positions. The boat is operated by outboard motors and the roof section is elevated and lowered by hand or motor drive utilizing a cable system mounted in the deck mounted post. A drainage system for water from the roof of the boat utilizes one portion of the upright post to conduct the water to a point below the floor of the boat.

3,800,727
AUTOMATIC LANDING SYSTEM FOR HYDROFOIL CRAFT
Donald R. Stark, Seattle, and Irving A. Hirsch, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 6, 1972, Ser. No. 312,483
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 H **6 Claims**



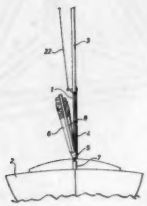
A control system for a hydrofoil characterized in that a transition from the foil-borne to the hull-borne mode of operation is initiated and the craft caused to descend or land automatically before an unsafe foil-borne roll or yaw attitude can be developed. This is achieved by providing an auxiliary electronic power source and auxiliary servo feedbacks in parallel with the main feedbacks for the control surface servos of the hydrofoil. The auxiliary feedbacks provide means for positioning the control surfaces to automatically land the craft upon the occurrence of a failure in the primary power source for the hydrofoil or some other off-normal condition.

3,800,728

MEANS FOR ATTACHING STAYSAILS TO STAYS

Thomas Barrow Dowling, Pilgrim Cottage, 31 Skipper Rd., Emsworth, England

Filed Aug. 15, 1972, Ser. No. 280,883
Claims priority, application Great Britain, Aug. 17, 1971, 38490/71; Dec. 10, 1971, 57485/71
Int. Cl. B63h 9/04
U.S. Cl. 114—105 5 Claims



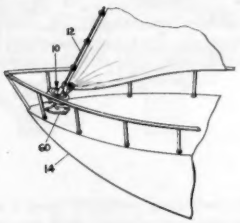
This invention describes means for attaching a staysail, constituting one component, to a stay (constituting a second component) in a sailing vessel. One of these components is fitted with a member which exhibits a channel formation, while the other component carries a plurality of slide elements which are slidingly engageable within the channel formation.

3,800,729

JIB DOWNHAUL

Miner S. Keeler, II, 2525 Indian Trl. S.E., Grand Rapids, Mich.

Filed May 19, 1972, Ser. No. 255,176
Int. Cl. B63h 9/08
U.S. Cl. 114—106 19 Claims



Downhaul apparatus for adjusting the tension on, or trim of, a sail on a sailing vessel when full wind pressure is on the sail including a cylinder threadably received on the forestay turnbuckle. The cylinder includes a shackle for securing the sail to the cylinder, which shackle is movably supported in a raceway on a plurality of annularly disposed roller bearings mounted along the edge of the raceway within the cylinder. The rotation of the cylinder by means of a removable wrench causes an axial movement of the cylinder along the turnbuckle while the shackle is held in the same position with respect to the turnbuckle within the raceway by the sail as a result of its movable support on the roller bearings.

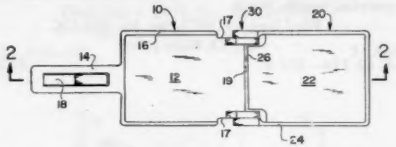
3,800,730

PORTABLE COLLAPSIBLE SIGNAL DEVICE

Betty L. Taylor, 932 E. Cone Blvd., Greensboro, N.C.

Filed May 2, 1973, Ser. No. 356,289
Int. Cl. G01d 21/00
U.S. Cl. 116—114 R 3 Claims

A portable, hinged signal device formed of two plates, one plate having a handle extending therefrom and both plates having a fluorescent paint treatment which substantially increases the visibility of the signal device during both daytime



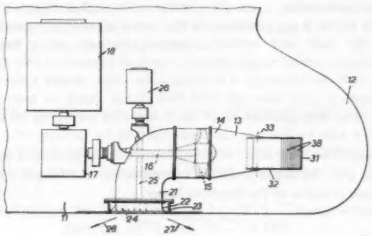
and nighttime use. A specially adapted hinge with a locking means joins the two plates along contiguous edges to positively hold the tool in either a closed or fully open position.

3,800,731

SHIP RETARDING SYSTEM

Owen George Slade, Isle of Wight, England, assignor to J. Samuel White & Company Limited, Hampshire, England

Filed May 10, 1972, Ser. No. 252,110
Claims priority, application Great Britain, May 13, 1971, 14635/71
Int. Cl. B63h 25/46
U.S. Cl. 114—145 R 5 Claims



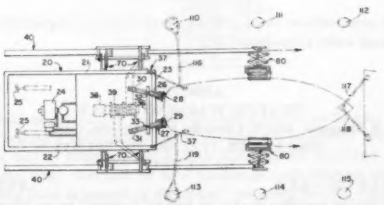
This is a retarding system for a ship consisting of a forward facing mouth leading by way of a duct containing a pump to a discharge director for discharging the water entering the mouth in a selected approximately horizontal direction, the discharge director being preferably in a flat bottom part of the hull. The duct can be closed for when the retarding action is not needed.

3,800,732

BOAT HULL CLEANING APPARATUS

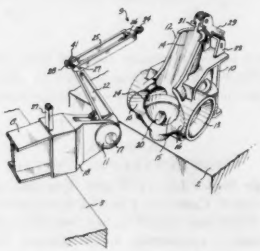
David A. Hill, 8026 Glendale Rd., Chevy Chase, Md.

Filed Feb. 1, 1973, Ser. No. 328,698
Int. Cl. B63b 59/00
U.S. Cl. 114—222 4 Claims



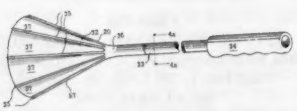
An in-water cleaning apparatus for boat hulls that is mobile and can attach to the stern of the boat hull to be cleaned. Forwardly telescoping tubes are projected underwater and carry laterally adjustable, rotating cleaning heads.

3,800,733
MARINE COUPLING
Harold H. West, Seattle, Wash., assignor to Sea-Link Incorporated, Seattle, Wash.
Filed Sept. 27, 1972, Ser. No. 292,530
Int. Cl. B63b 21/60
U.S. Cl. 114—235 A 5 Claims



The hook of a ball coupling component is engageable with a boss upstanding from the bottom of a socket component. In such latched relationship of the components the attachments of the ball and socket components can move relatively through a small angle about a vertical diametral axis through the ball and through a considerable angle about a horizontal diametral axis through the ball. Such hook is moved into latching engagement with such boss by swinging of a lever which can be held in latched position by locking of a toggle clamp. The lever can be swung manually or by a fluid-pressure jack, and the same jack can be relocated to swing the locking means relative to the latching lever.

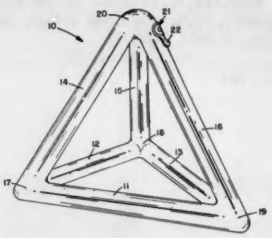
3,800,734
WATER PROPULSION DEVICE
Lee Yun Whang, Executive Hotel 237 Madison Ave., New York, N.Y.
Filed June 20, 1972, Ser. No. 264,487
Int. Cl. B63h 16/04
U.S. Cl. 115—31 4 Claims



A compression head with an inner valve is adapted for improved water propulsion.

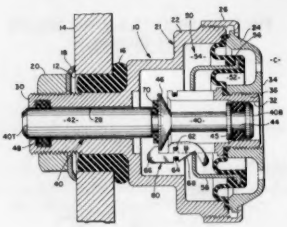
3,800,735
TRAFFIC WARNING DEVICE
Lee S. Simpson, 440 N. Cornelia Ave., Fresno, Calif.
Filed Aug. 18, 1972, Ser. No. 281,932
Int. Cl. E01f
U.S. Cl. 116—63 P 9 Claims

A traffic warning device or barrier comprising an interconnected group of hollow tubes, there being six tubes arranged as the edges of a tetrahedron. At each vertex the tubes communicate with each other, so that there is a continuous passage through the hollow system. The tubes may be rigid or may be inflatable, and there is a filling valve at any suitable location. In use, it is preferred to fill at least the three horizontal tubes with water, dry sand, lead shot, gravel, marbles, or other



suitable weighting material. The three partly vertical inclined tubes may be so filled or be filled with air, especially when the barrier is of the inflatable type.

3,800,736
PRESSURE CHANGE INDICATOR
Henry W. Krohn, Durham, N.C., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 12, 1973, Ser. No. 340,502
Int. Cl. G01l 19/12
U.S. Cl. 116—70 18 Claims

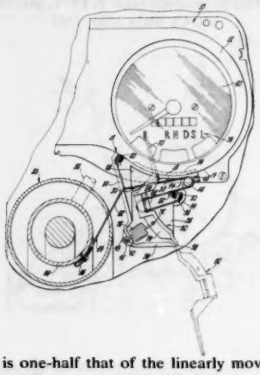


A device for indicating variations from a predetermined pressure in a pressurized container such as a pneumatic tire. The device includes a first chamber exposed to pressure within the monitored container and a second chamber, or reference chamber, which is selectively pressurized to a predetermined reference pressure. A mechanism sensitive to a predetermined pressure differential between the two chambers will simultaneously indicate the pressure change and will place the two chambers in fluid communication. Upon equalization of pressure between the two chambers, the mechanism may be returned to a position whereat it will cease to indicate and will block fluid communication between the two chambers.

3,800,737
SHIFT INDICATOR ARRANGEMENT
Theodore Lambiris, Walled Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 30, 1973, Ser. No. 384,040
Int. Cl. G09f 9/00
U.S. Cl. 116—124 R 4 Claims

An improved shift indicator arrangement including a one-piece polypropylene housing and integrally molded pointer mechanism interconnected by a flexible hinge, the combination having provisions formed thereon suitable for the connec-

tion thereto of a steering column shift tube-actuated cable such that the extent of resultant travel of the pointer



mechanism is one-half that of the linearly movable cable in order that a smaller, more practicable indicator gage or scale may be used.

ERRATUM

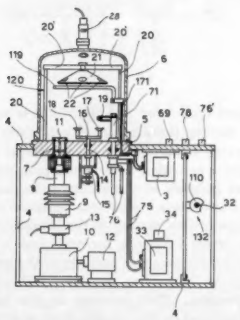
For Class 116—114 R see:
Patent No. 3,800,730

3,800,738

APPARATUS FOR COLORING ARTICLES, FOR INSTANCE LENS FOR SPECTACLES

Pino Tassara, Milano, Italy, assignor to Metal Lux S.p.A., Milano, Italy

Continuation of Ser. No. 139,035, April 30, 1971, abandoned. This application July 24, 1972, Ser. No. 274,688
Claims priority, application Italy, May 6, 1970, 24220/70
Int. Cl. C23c *13/08*
U.S. Cl. 118—8 **12 Claims**



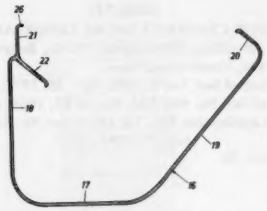
An apparatus for coloring lens for spectacles by evaporating the coloring material under vacuum, comprises a vacuum chamber where both the lens to be colored and the coloring material are introduced. The material is evaporated by a resistor which is supplied with a constant voltage by a variable transformer. The transformer is disabled by a comparing circuit apt to compare the intensity of coloration, continuously sensed by a photocell, with a predetermined intensity of coloration previously set on a potentiometer, upon said photocell sensing a sample lens.

3,800,739

FEED SAVER FOR A POULTRY EGG LAYING BATTERY

Hakan Andersson, Kvarnliden 4, 532 00 Skara, Sweden

Filed July 7, 1972, Ser. No. 269,806
Int. Cl. A01k *31/18, 39/00*
U.S. Cl. 119—18 **3 Claims**



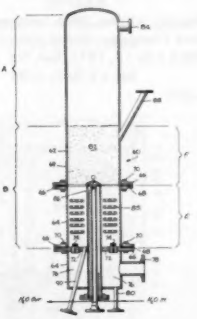
A poultry laying battery is provided with a snap fit feed trough of generally U-shaped cross section extending along the front side of the battery. In order to prevent the birds scattering the feed, the side wall of the trough extending parallel to the front side of the battery is provided with a flange, slightly inclined downwards. An extension of the side wall is provided above said flange, with this extension being displaced away from the side wall by a distance substantially corresponding to the thickness of a bar forming a main component of the front side cage structure.

3,800,740

APPARATUS FOR DECOMPOSITION OF METAL CARBONYLS

Ronald Dale Robinson, Port Colborne, Ontario, Canada, assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 154,853, June 21, 1971. This application Dec. 14, 1972, Ser. No. 315,109
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **3 Claims**



Fluid bed reactors for decomposing metal carbonyls and comprising a vertically disposed, elongated vessel for confining a bed of fluidized particulate material are provided with heating coils, that can be heat exchange coils through which heating fluid is passed or electrical resistance heating coils, in the lower part of the reactor and fluidized bed so that the lower portion of the fluidized bed functions as a heating region while the upper portion functions as a decomposing zone. The lower and upper portions of the fluidized bed are volumetrically proportioned to provide substantially equal gas velocities to promote conveyance of heated particulate material from

the heating region to the decomposing region. A process for decomposing metal carbonyls is also disclosed in which separate heating and decomposing regions in a fluidized bed are established and a metal carbonyl is introduced into the decomposing region via a water-cooled lance to be decomposed on heated particulate material.

3,800,741

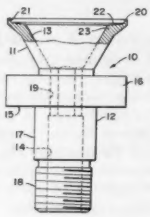
CHUCK FOR CROWN CLOSURE LINING APPARATUS

Richard C. Boulton, Wilmington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 92,942, Nov. 25, 1970, abandoned, Division of Ser. No. 809,505, March 24, 1969, abandoned. This application Feb. 12, 1973, Ser. No. 331,418

Int. Cl. B29c *13/02*

U.S. Cl. 118—50 1 Claim



A chuck to be fitted on the rotatable spindles of crown closure lining machines is adapted to center and hold both normal crowns and crowns having protruding tabs, and hold them in centered position despite the off-centering effect of the tab. The chuck has a shallow rim which surrounds the seated crown, a narrow shoulder on which the crown seats, and an inwardly directed conical bore leading to a vacuum passage through the spindle.

3,800,742

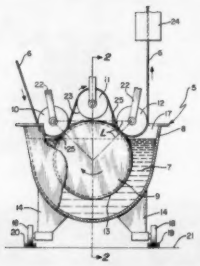
APPARATUS USED IN THE TREATMENT OF TIRE CORD FABRIC

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 12, 1972, Ser. No. 270,899

Int. Cl. B05c *1/08*

U.S. Cl. 118—246 8 Claims



A dip tank for holding liquid adhesive for increasing the bond between tire cord fabric and rubber material used in the production of pneumatic tires, and a series of rollers for directing tire cord fabric into contact with the liquid adhesive in the dip tank.

3,800,743

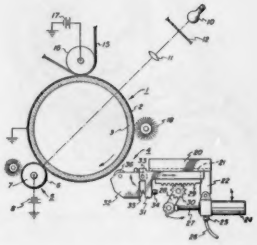
MATERIALS APPLICATION APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 876,646, Nov. 14, 1969, Pat. No. 3,609,029. This application Mar. 1, 1971, Ser. No. 119,914

Int. Cl. B05c *1/06, 1/08*

U.S. Cl. 118—259 9 Claims



Apparatus for coating materials onto a surface comprising a housing pivotally connected to a carriage, a chamber and applicator within the housing. The pressure of the applicator against the surface to be coated is adjusted by varying the pivot of the housing containing the applicator relative to the carriage. The entire apparatus is advanced automatically into and out of contact with the surface to be coated. An alternative embodiment with an extruder applicator is also disclosed.

3,800,744

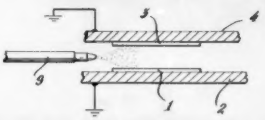
ELECTROSTATIC LATENT IMAGE DEVELOPING APPARATUS

Seiji Matsumoto, and Yasuo Tamai, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1971, Ser. No. 210,883

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 6 Claims



A developing technique and apparatus is provided wherein an insulator having thereon an electrostatic latent image is positioned across a gap from an electric field controlling insulator. The gap is provided with developing particles, charged with the same polarity as the electrostatic latent image. The electric field controlling insulator is designed to have a surface potential characteristic similar to the insulator upon which the electrostatic latent image is formed, and is charged to the same level and with the same polarity as the image. As a result, the electric field controlling insulator will have a field variation compensation effect relative to the electric potential otherwise generated by the electric field controlling insulator.

3,800,745

ANIMAL FEEDER

Arthur L. Fassauer, P.O. Box 615, Canyon, Tex.

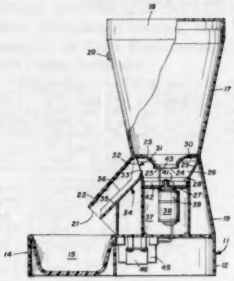
Filed July 27, 1972, Ser. No. 275,756

Int. Cl. A01k *5/02*

U.S. Cl. 119—51.11 11 Claims

A hopper stores a quantity of dry, particulate animal feed and is partially closed at the bottom by a feed guide plate having downwardly curved sides and a central circular orifice.

The orifice extends into an agitator chamber having generally conical wall surfaces and a flat circular floor. The conical walls of the agitator chamber include a discharge opening which leads to a delivery chute. A motor driven agitator blade having an upstanding feeder shaft extending into the hopper orifice is rotatably mounted above the floor of the agitator



chamber. When the motor is energized rotation of the agitator blade, including the feeder shaft, causes feed to flow from the hopper orifice into the path of the agitator blade. The rotating blade fluidizes the feed particles and centrifugally deflects them in a circular path about the chamber walls so that the feed flows through the discharge opening down the delivery chute and into an eating bowl.

3,800,746

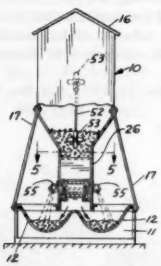
AUTOMATIC FEED DISPENSING APPARATUS

James F. Stidham, 820-Sargent, Fort Worth, Tex.

Filed Apr. 6, 1972, Ser. No. 241,554

Int. Cl. A01k *5/00*

U.S. Cl. 119—56 R **7 Claims**



An elongated feed bin includes a base portion, having parallel bunkers or feed troughs on opposite sides, supporting a hopper portion which stores the feed and supports a dispenser assembly at the base of the hopper portion for dispensing feed into the bunkers. The dispenser assembly includes a reciprocable slide defining feed cups, with the slide movable between cover means and a support plate. The cover means has openings permitting the filling of the cups in one position of the slide, and the support plate has openings permitting the discharge of the cups in another position of the slide. The slide is reciprocated by a suitable motor; and a control means controls the number of cycles of the slide to determine the amount of feed dispensed. The feed bin also includes water dispensing means controlled by the control means for dispensing a measured amount of water into the feed bunkers along with the feed.

3,800,747

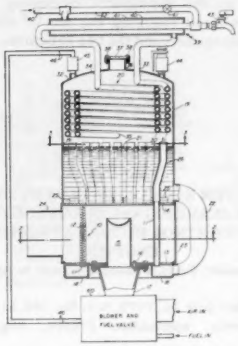
HEAT TRANSFER STRUCTURE

William H. Hapgood, Brookline, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 177,024, Sept. 1, 1971. This application Sept. 25, 1972, Ser. No. 292,024

Int. Cl. F27b *25/00*

U.S. Cl. 122—235 R **10 Claims**



A heat transfer system in which circulation of a liquid through a heat exchanger is achieved by having risers filled with fluid consisting of a liquid which partly vaporizes on heating and rises to a condensing region where a heat exchanger, positioned in close proximity to the upper ends of the risers, condenses the vapor portion of the fluid. A downcomer returns the condensed liquid to the lower ends of the risers so that continuous circulation of the fluid through the heat exchanger occurs automatically when heat is supplied to the risers.

3,800,748

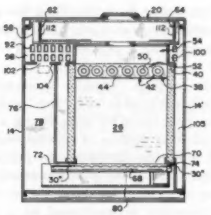
FLUID HEATER APPLIANCE

Herbert Schindler, North Hollywood, and Willard O. Ware, Stockton, both of Calif., assignors to M.M.S. Limited, Alameda, Calif.

Filed Jan. 8, 1973, Ser. No. 322,074

Int. Cl. F22b *21/00*

U.S. Cl. 122—367 C **34 Claims**



A fluid heating appliance of the stackless type particularly adapted for heating swimming pool water. A rectangular housing or cabinet is assembled and contains a combustion chamber, a heat exchanger capable of carrying the fluid to be heated and disposed within said combustion chamber whereby to intercept the flow of combustion products, a flue collector immediately adjacent said heat exchanger, a flue products outlet chamber or duct adjacent said flue collector and adapted to receive the combustion products from the flue collector and having an outlet for discharge of collected com-

bustion products to the atmosphere, a fresh-air intake, a control chamber communicating between said fresh-air intake and said combustion chamber, a restricted aperture disposed between said fresh-air intake and said control chamber for aspirating a given quantity of air to the control chamber and at least one passageway communicating between said fresh-air intake and the exterior of the appliance by-passing said control chamber whereby in adverse weather conditions, any excessive quantity of air is directed by way of said passageway for discharge to the atmosphere by-passing said control chamber, yet without requiring the use of additional draft diverters, baffles, spoilers and the like structures.

3,800,749

APPARATUS FOR REGULATING THE DURATION OF A SQUARE-WAVE SIGNAL IN AN ELECTRONIC INJECTION CONTROL INSTALLATION FOR DIESEL ENGINES

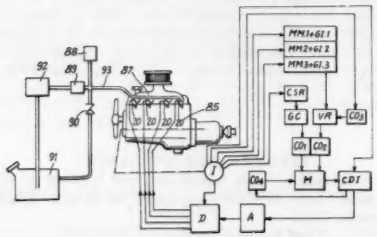
Pierre M. Advenier, Paris, France, assignor to Sofredi, Clichy, France

Filed July 26, 1971, Ser. No. 166,150

Claims priority, application France, Aug. 14, 1970, 70.29983

Int. Cl. F02b 3/00; F02m 39/00

U.S. Cl. 123—32 EA **14 Claims**



An electronic apparatus for controlling the injection period of internal combustion engines having electromagnetic fuel injectors in accordance with a predetermined relation between injection period and engine speed. A pulse generator synchronized with engine rotation generates pulses corresponding to each successive injection period. Each pulse triggers a function generator for developing a reference voltage which is a real time analog of a predetermined curve of fuel quantity per injection (or injection period) versus time between injections. Each pulse simultaneously triggers a circuit for generating a rectangular delay signal of a variable duration which is inversely proportional to a selected engine speed. A memory circuit initiates the development of a regulating voltage in response to the termination of the rectangular delay signal. The magnitude of the regulating voltage rises from zero until it corresponds to the instantaneous value of the simultaneously developing analog reference voltage and then follows the reference voltage until initiation of the succeeding pulse from the pulse generator. A fuel injection signal generator initiates a rectangular fuel injection signal in response to the succeeding pulse from the pulse generator, the duration of the injection signal being a direct function of the instantaneous value of the regulating voltage at the moment of initiation of the injection signal.

3,800,750

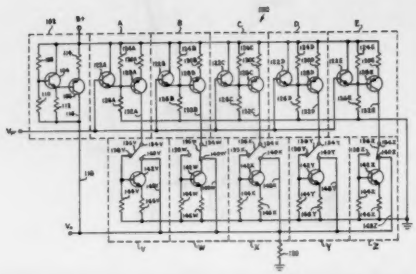
METHOD AND APPARATUS FOR PROVIDING A NONLINEAR PRESSURE TRANSDUCER OUTPUT SIGNAL

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1971, Ser. No. 170,564

Int. Cl. F02m 51/00

U.S. Cl. 123—32 EA **4 Claims**



By deriving a substantially linear voltage signal from a pressure transducer and using that signal to control a plurality of current sources and current sinks, the controlled currents generated thereby may be passed through a resistance of known value to produce a usable output signal having a nonlinear relationship with respect to the pressure sensed by the transducer. If current sources to be controlled are designated by N, the resultant curve can have N-1 breakpoints where the slope of the curve of output voltage with respect to sensed pressure changes. By controlling a plurality of current sources which are active for all values of sensed pressure, the slope of the resultant curve can change from positive to negative values and back again.

3,800,751

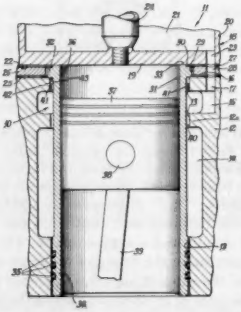
CYLINDER LINER WITH CENTERING TABS DEFINING COOLANT PASSAGES THERE-BETWEEN

Stephen F. Glassey; Allan C. Hahn, and Dale L. Shellenbaum, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 22, 1972, Ser. No. 317,521

Int. Cl. F02f 1/10

U.S. Cl. 123—41.84 **10 Claims**



An internal combustion engine comprises a block having a plurality of cylinder liners mounted therein. Interconnecting passages continuously circulate a coolant through the block and around each liner during engine operation. Each liner has

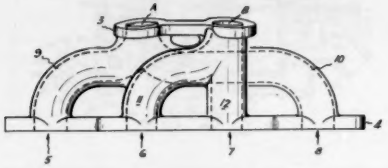
a plurality of circumferentially spaced tabs formed therearound to center the liner in a cylinder bore and to define passages therebetween for communicating coolant to an upper, radial support flange seated on the block.

3,800,752

PETROL ENGINE AND INTAKE MANIFOLD

John Wilfred Bruderlin, Chiswick, New South Wales, Australia, assignor to Lynx Engineering (Sales) Pty. Limited, New South Wales, Australia

Filed Aug. 14, 1972, Ser. No. 280,420
Int. Cl. F02m *13/04*
U.S. Cl. 123—52 M 1 Claim



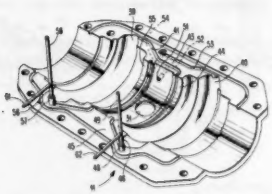
An intake manifold for a four cylinder internal combustion engine having twin ducts and a twin choke carburettor in which one of the chokes is in communication with two of the cylinders and the other choke is in communication with the other two of the cylinders. The ducts are so arranged that in the normal firing order for the engine the first and third cylinders to fire are connected to one of the chokes and the second and fourth cylinders to fire are connected to the other of said chokes.

3,800,753

DRAINAGE SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING A HORIZONTALLY DISPOSED CRANKSHAFT

Patrick H. Sullivan, Milwaukee; George W. Leidgen, Oakfield, and James C. Hubbell, Fond du Lac, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Sept. 29, 1972, Ser. No. 293,435
Int. Cl. F02b *33/04*
U.S. Cl. 123—73 A 4 Claims



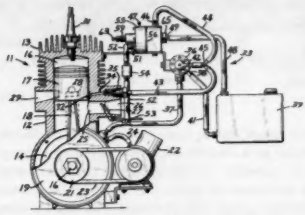
A two-cycle internal combustion engine, which has two cylinders, has a horizontally disposed crankshaft with the crankcase divided into first and second chambers communicating with each of the cylinders and a third chamber communicating with the carburetor and with each of the first and second chambers through reed valves. Drainage, which comprises oil with some gasoline, is collected in the lowermost portion of each of the first and second chambers and directed past a check valve into a passage for supply to the other cylinder when reduced pressure exists therein. The drainage, which accummulates in the third chamber, is supplied to one of the two connecting passages through a check valve for supply to the cylinder connected to that passage.

3,800,754

ENGINE FUEL INJECTION SYSTEM

Lowell D. Carlson, Pencer; Gerald D. Reese, Brooten, and Gerald G. Shank, Roseau, all of Minn., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 58,431, July 27, 1970, Pat. No. 3,707,143. This application Dec. 27, 1971, Ser. No. 212,036
Int. Cl. F02m *69/10*
U.S. Cl. 123—73 CB 7 Claims



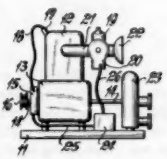
A fuel control system for low pressure fuel injection apparatus on an internal combustion engine. An impulse fuel pump operated by pulsating crankcase pressure delivers a desired quantity of fuel to the fuel port of the engine combustion chamber, and returns the unused portion of its output to the fuel tank through a bypass line. The quantity of fuel diverted to the bypass is controlled by a pressure actuated valve as a function of crankcase pressure, which is determined by throttle demand and engine speed, and by the pump output, as measured by pressure in the fuel line.

3,800,755

SPEED REGULATING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Erich Klaiber, Stuttgart; Hans Stockle, Neckarweihingen, and Helmut Domann, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 11, 1971, Ser. No. 197,814
Claims priority, application Germany, Nov. 13, 1970, 2055874
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 15 Claims



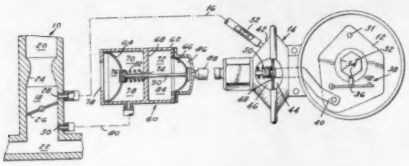
A speed regulating arrangement for internal combustion engines in which an electrical pulse generator is coupled to the crankshaft of the engine and is operated in accordance with the engine speed. The pulse generator applies its output to an electronic speed regulating circuit which, in turn, operates an electromagnet having a rotatable armature. The throttle flap of the engine is coupled to the armature and positioned in accordance with the signal output from the electronic speed regulating circuit. The latter has a series circuit of a monostable stage, a low pass filter, a regulating stage and a power amplifier.

3,800,756

SPARK TIMING CONTROL

Gerald B. Bishop, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 24, 1972, Ser. No. 228,863
Int. Cl. F02p 5/04
U.S. Cl. 123—117 A 10 Claims



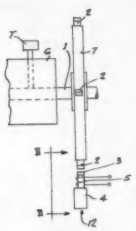
The engine spark timing system includes a carburetor spark port connected to a distributor servo actuator through a flow restriction to normally slowly advance the spark timing as a function of increases in spark port vacuum to control emissions; the timing system also includes a device for temporarily inducing a higher vacuum in the servo during initial rapid accelerative movement of the throttle valve to temporarily increase or advance the spark timing to prevent engine backfire, the device being operative by decreases in engine intake manifold vacuum from a stable condition.

3,800,757

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Stanley R. Finch, 10903-56th St., Edmonton, Alberta, Canada

Filed Mar. 2, 1972, Ser. No. 231,235
Claims priority, application Canada, Mar. 12, 1971, 107594
Int. Cl. F02p 5/00
U.S. Cl. 123—117 R 3 Claims



For use with an internal combustion engine having a throttle, a crankshaft, distributor means connected in a predetermined timing relationship with said crankshaft and ignition means connected to said distributor means; an improved ignition timing system for controlling said ignition means, said timing system comprising

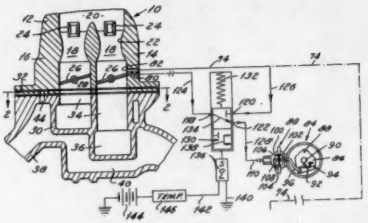
a. speed detecting means connected to the crankshaft for detecting the speed thereof,
b. throttle position detecting means connected to the throttle for detecting the degree of openness thereof,
c. and time delay means connected to the ignition means for controlling energisation thereof at a selected time in relation to rotation of said crankshaft,
d. said time delay means being connected to said speed detecting means and to said throttle position detecting means for advancing said selected time in response to an increase in the crankshaft speed and for retarding said selected time in response to an increase in the openness of the throttle.

3,800,758

TEMPERATURE ACTUATED ENGINE SPARK VACUUM CONTROL SYSTEM

Gilbert J. Sutherland, Trenton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1972, Ser. No. 312,770
Int. Cl. F02p 5/04
U.S. Cl. 123—117 A 5 Claims



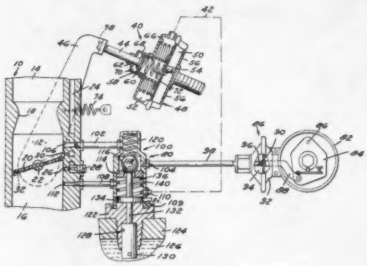
A two position selector valve alternately connects EGR (exhaust gas recirculation) port vacuum or carburetor spark port vacuum to the engine distributor spark advance control as a function of outside ambient air temperature, to improve vehicle drivability while maintaining a constant emission level.

3,800,759

TEMPERATURE SENSITIVE ANTI-DIESELING CONTROL

Raymond J. Cedar, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,497
Int. Cl. F02d 11/08
U.S. Cl. 123—117 A 1 Claim



The engine carburetor has a manifold vacuum controlled servo that normally prevents return of the carburetor throttle valve to a position more closed than a normal engine idle speed position; the servo, however, being rendered inoperative when the engine operating temperature exceeds a predetermined level so that the throttle valve can be closed; and, an engine temperature sensitive device moving above the predetermined temperature level to direct manifold vacuum to the spark ignition system to advance the same and increase engine idle speed, closing of the throttle valve by the servo compensating for and balancing the increase in engine idle speed by the spark advance mechanism to provide essentially a constant engine idle speed regardless of temperature changes to prevent engine dieseling upon engine shutdown.

3,800,760

ROTARY INTERNAL COMBUSTION ENGINE

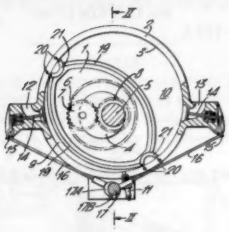
Gerald John Knee, 43 High St., Syresham, Northamptonshire, England

Filed Mar. 31, 1972, Ser. No. 239,974

Claims priority, application Great Britain, Apr. 2, 1971, 8566/71

Int. Cl. F02b *53/10*

U.S. Cl. 123—8.09 5 Claims



A double chamber, four-stage rotary internal combustion engine has a substantially elliptical rotor which is eccentrically mounted on a drive shaft for rotation within a substantially cylindrical casing and is provided with side seals and apex seals which co-operate with the inner surfaces of the casing to define chambers on opposite sides of the rotor. A geared connection between the rotor and the housing ensures that the rotor rotates about the drive shaft so that the volume of each chamber is alternately reduced to a minimum and increased to a maximum, and that the drive shaft rotates at twice the speed of the rotor. Valve gear operably connected to a drive shaft with a speed reduction of 4:1, is effective to control poppet valves or rotary valves for the successive induction of gaseous medium to the chambers within the casing during one revolution of the rotor and successive discharge of gaseous medium from the two chambers during a later revolution of the rotor. The engine may be provided with a sparking plug to initiate combustion, or may operate by compression ignition.

3,800,761

NEW INTERNAL COMBUSTION ENGINE ACTUATOR FLUID PRODUCING NO NITROGEN OXIDE IN EXHAUST GASES, ITS MANUFACTURING METHOD AND AN APPARATUS THEREFOR

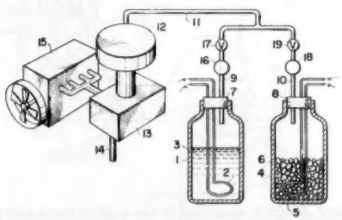
Naoyasu Sata, No. 80, Yamate-cho, Ashiya-shi, Hyogo-ken, Japan

Filed May 10, 1971, Ser. No. 141,748

Claims priority, application Japan, Dec. 19, 1970, 45-113655

Int. Cl. F02m *21/00*

U.S. Cl. 123—119 E 10 Claims



An internal combustion engine actuator fluid which is a mixture of oxygen and an inert gas other than nitrogen is manufactured by first heating liquid oxygen and a liquid or solid inert gas other than nitrogen - which are housed in separate closed containers sealed from the external atmosphere - to gasify them therein separately, and then leading these two kinds of gases to a mixing unit to be uniformly mixed at a predetermined mixing ratio. The use of this new actuator fluid in internal combustion engines serves to produce, in the exhaust gases, no nitrogen oxides which are one of the air pollution components and are physiologically harmful to human being when installed.

3,800,762

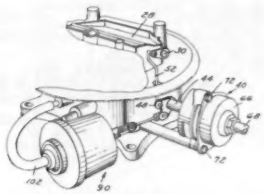
SUPPLEMENTAL PULLDOWN MECHANISM FOR CARBURETOR AUTOMATIC CHOKE

Charles W. McCullough, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,362

Int. Cl. F02m *1/10, 1/14*

U.S. Cl. 123—119 F 5 Claims



The carburetor has a conventional automatic choke construction heating a bimetallic coil by engine exhaust stove heat to slowly open the choke valve during cold weather starts; a supplemental temperature responsive power means operable above a predetermined ambient temperature moves the choke valve open faster, to reduce emissions.

3,800,763

SUPERCHARGED FOUR STROKE INTERNAL COMBUSTION ENGINE

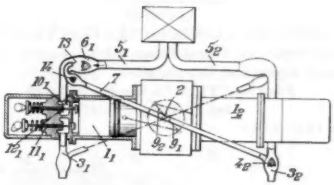
Robert Jean Pouit, 3, rue August Mayet, 92 Asnieres, France

Continuation-in-part of Ser. No. 160,377, July 7, 1971, abandoned. This application Mar. 22, 1972, Ser. No. 237,104

Claims priority, application France, Nov. 5, 1971, 71.39840

Int. Cl. F02b *33/00*

U.S. Cl. 123—119 C 25 Claims



In a four-stroke multicylinder internal combustion engine the exhaust space of each cylinder is connected to the intake of another cylinder out of phase with respect to the first by a half-cycle period via a communication pipe provided wwth non-return means. The underpressure due to the initial puff supercharges the second cylinder. Non-symmetrical nozzles constituting non-return means are provided in the exhaust space of each cylinder downstream of the mouth of the pipe in this exhaust space and in the intake space of each cylinder upstream of the position where the pipe opens into this intake space. Other non-return nozzles are arranged in the communication pipes. Each nozzle located in the exhaust space com-

prises an axial element having substantial thermal inertia and the pipe directs onto that element a flow of a fuel-air mixture having an adjustable air content, thereby reducing the atmospheric pollution. For increased efficiency, the nozzles may limit an annulus struck by the back flow and in which are provided inclined fins which cause rotation of said gas around the axis of this nozzle and prevent back flow from occuring. The invention is suitable for use in reciprocal piston and rotary piston engines.

3,800,764

EXHAUST GAS RECYCLING SYSTEM

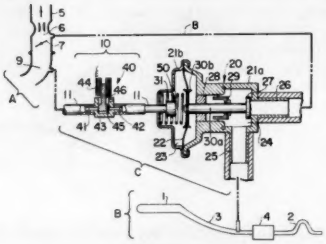
Kenji Goto, and Kiyohiko Mizuno, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-Ken, Japan

Filed Sept. 5, 1972, Ser. No. 286,358

Claims priority, application Japan, Mar. 14, 1972, 47-29966[U]

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **4 Claims**



An exhaust gas recycling system for an internal combustion engine having an intake system for introducing a fuel-air mixture into the engine; an exhaust system for discharging exhaust gases from the engine to the atmosphere; a recycling pipe connected to both the intake system and the exhaust system for recycling exhaust gases; and a device for modifying the volume of the recycling exhaust gases through the recycling pipe, responsive to changes in the pressure in an intake manifold of the inlet system, including a device for sensing the intake manifold pressure, the sensing device having a diaphragm chamber, a diaphragm positioned in the diaphragm chamber, an induction pipe connected to both the intake manifold and the diaphragm chamber through which the pressure in said intake manifold propagates to the diaphragm chamber, and a device for retarding the propagation of the pressure from the intake manifold to the diaphragm chamber.

3,800,765

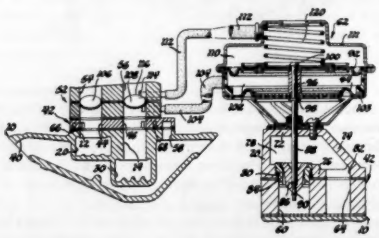
EXHAUST GAS RECIRCULATION VALVE

Albert L. Thompson, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1972, Ser. No. 307,439

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **1 Claim**



A dual diaphragm operated control valve assembly, responsive both to a pressure signal created at an induction passage slot traversed by the edge of the throttle and to manifold pressure, controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages.

3,800,766

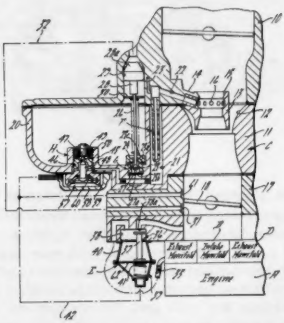
EGR ENRICHMENT VALVE

Phillip A. Schubeck, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 1, 1973, Ser. No. 328,825

Int. Cl. F02n *25/06*

U.S. Cl. 123—119 A **5 Claims**



An internal combustion engine is disclosed having an exhaust gas recirculation system effective to return exhaust gases to the intake manifold. The carburetion system for the engine is arranged to compensate for the recycling of exhaust gases by the use of in-series fuel enrichment valves subject to the same limiter, the first being effective to introduce supplementary fuel in response to an increase in ported advance vacuum taken from the carburetor and the second adding fuel during wide-open throttle conditions in response to the dissipation of manifold vacuum.

3,800,767

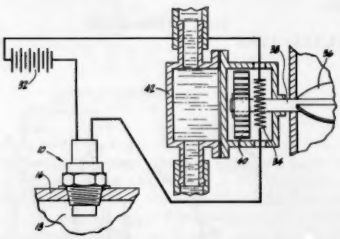
THERMO SWITCH ARRANGEMENT FOR CONTROL OF AN INTERNAL COMBUSTION ENGINE

Jerry H. Winkley, St. Louis, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,759

Int. Cl. F02d *11/08;* **F02m** *1/10, 23/04*

U.S. Cl. 123—119 F **6 Claims**



A dual switch is mounted in the wall of the water jacket of the engine so that one thermo switch responds to the engine heat and the other thermo switch responds to the ambient temperature. The switches are connected in series with a source of current and a heater in proximity to an expansible coil controlling the choke valve. The coil is adjacent a water

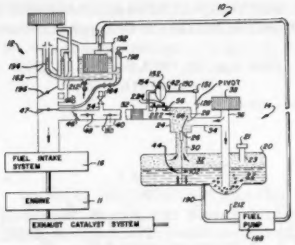
jacket so that it is affected by engine heat. The engine heat responsive thermo switch remains closed until the engine temperature approaches a near-normal value. At low temperatures, the ambient switch is open, and it closes only after the choke is opened following a warm-up period. During cooling of the engine, the ambient switch remains closed down to a relatively low temperature, so that if the engine is "soaked," the heater will be energized for quick opening of the choke, to relieve the "soak" condition. Another dual thermo switch may be similarly mounted in the wall of the water jacket and connected in a circuit for controlling the ignition advance means of the distributor.

3,800,768

APPARATUS AND METHOD FOR FUELING AN INTERNAL COMBUSTION ENGINE

Joseph C. Rhodes, Park Forest, and Irwin Ginsburgh, Morton Grove, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,708
Int. Cl. F02m *17/22*
U.S. Cl. 123—133 **8 Claims**



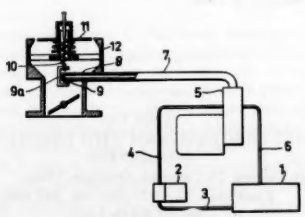
Disclosed is a method and apparatus for operating an internal combustion engine in a manner to reduce hydrocarbon and carbon monoxide exhaust emissions during startup and warmup of the engine. Means are provided for bypassing the engine carburetor and fueling the engine with a gaseous fuel of air and low boiling gasoline components derived from gasoline by bubbling air through the gasoline. After the engine and emission control devices have reached predetermined operating conditions, fuel is supplied to the engine by the carburetor. A novel mixing valve is employed for controlling the air-fuel ratio of the gaseous fuel.

3,800,769

INJECTOR CARBURETOR

John Holger Graffman, Blomsterstigen, 9, Danderyd, Sweden

Filed June 14, 1971, Ser. No. 152,588
Claims priority, application Sweden, June 17, 1970, 8381/70
Int. Cl. F02m *45/08, 21/04*
U.S. Cl. 123—139 AW **1 Claim**



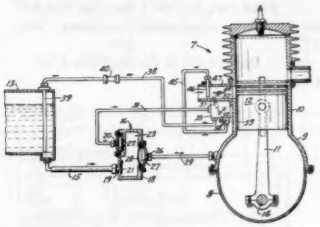
This application relates to low profile injection carburetors in which the proportioning of the injected fuel to the demands of the motor is effected by providing an arrangement for returning some of the pulsed fuel to the fuel storage tank, the amount returned being decreased as motor demands increase, said control being effected by a valve, the loading of which changes in response to an operating condition of the motor.

3,800,770

FUEL INJECTION SYSTEM

Ronald O. Baribeau, 112 N. Greenley, Stillwater, Minn., and Russell A. Baribeau, 317 E. Church, Stillwater, Minn.

Continuation of Ser. No. 146,627, May 25, 1971, abandoned.
This application Apr. 11, 1973, Ser. No. 349,955
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 AJ **9 Claims**



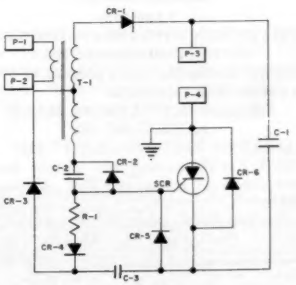
A fuel injection system for internal combustion engines wherein the fuel is injected under pressure into a nozzle disposed in the air intake passageway. The discharge pressure of the fuel is controlled by a pump responsive to the intermittent crank case pressures and the amount of fuel carried to the nozzle and carried into the cylinder on the intake stroke is regulated by a speed control valve in the fuel line between the pump and the nozzle. A minimum pressure is maintained by a restriction in a bypass return line.

3,800,771

IGNITION SYSTEMS

Ronald D. Mackie, Rt. 1, Box 776-P, Pensacola, Fla.

Continuation of Ser. No. 80,326, Oct. 15, 1970, abandoned.
This application Mar. 10, 1972, Ser. No. 233,623
Int. Cl. F02p *3/02, 1/00*
U.S. Cl. 123—148 E **11 Claims**



A capacitive discharge ignition system which does not use transistors and which transfers power from the vehicle battery to the discharge capacitor both inductively and capacitively thereby resulting in increased efficiency. The primary winding of a step-up transformer is connected in series with the vehicle battery and the distributor points and transfers energy to a discharge capacitor connected in the secondary circuit of the transformer when the points close. The discharge capacitor is

also charged by energy from another capacitor in the secondary circuit which is charged during the previous points open period. The discharge capacitor is connected in parallel with the series combination of an SCR and the ignition coil of the vehicle and discharges through the ignition coil to provide spark energy when the SCR is turned on by the points opening. Reverse biasing of the gate-emitter junction of the SCR begins shortly after turn on to prevent misfire and to facilitate turn off of SCR when the anode of the SCR becomes backbiased.

3,800,772

PROCESS FOR PREHEATING AN EXHAUST GAS PURIFYING DEVICE

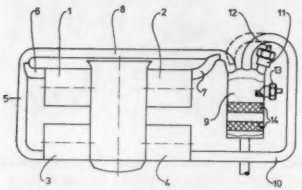
Reinhard Gospodar, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Dec. 20, 1972, Ser. No. 316,837

Claims priority, application Germany, Dec. 21, 1971, 2163537

Int. Cl. F02b *75/10*; **F01n** *3/14*

U.S. Cl. 60—274 **10 Claims**



A process for preheating an exhaust gas purifying device for an internal combustion engine. The process includes the steps of interrupting fuel delivery to at least one cylinder of the engine when starting the engine; introducing into the purifying device the air drawn in and exhausted by the cylinder to which fuel delivery is interrupted; and igniting a mixture of the air and added fuel in the purifying device. The air from the cylinder may be introduced into the purifying device either together with or separately from exhaust gases from the other cylinders and at least a portion of the air may be stored before being introduced into the purifying device to equalize the flow. The air may be mixed with the fuel either before or after it is introduced into the purifying device and the fuel with which the air is mixed may include excess fuel accumulated in and exhausted by the other engine cylinders.

3,800,773

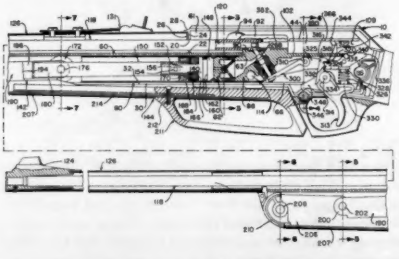
PNEUMATIC GUN WITH LOST MOTION PISTON-PISTON ROD CONNECTION

Earl L. Fischer, Bentonville, Ark., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed June 16, 1972, Ser. No. 263,640

Int. Cl. F41b *11/00*

U.S. Cl. 124—13 A **7 Claims**



There is herein disclosed a pneumatic gun of the type having an air storage chamber selectively connectable to a firing chamber by a valve. The valve is movable between a closed position and an open position by a trigger actuated control lever. The control lever is movable between cocked and uncocked positions by a manually slidable bolt and is latched in a cocked position by a spring loaded trigger having a latching finger in constant abutting engagement with the control lever. There is a lost motion connection between the control lever and the valve such that the valve is openable by the combined effects of air pressure and a spring by movement relative to the control lever. The storage chamber is formed between cylindrical block members held in spaced relationship in a common cylinder. A combination check valve and sealing annulus is compressibly mounted between the block members. A piston assembly is also mounted in the common cylinder and connected to a piston rod by a lost motion connection enabling movement of the piston assembly relative thereto under the influence of a resilient compressible annulus.

3,800,774

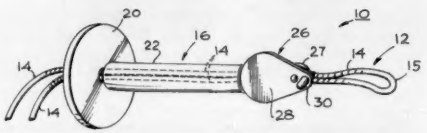
ARCHERY BOW STRING RELEASE DEVICE

Fernando Troncoso, Jr., 1851 S. Orange Ave., Monterey Park, Calif.

Filed Apr. 20, 1973, Ser. No. 352,939

Int. Cl. F41b *5/00*

U.S. Cl. 124—35 A **11 Claims**



An improved archery bow string device comprises a release member releasably engageable with a bow string, an elongated pull member connected to the release member and extending rearwardly thereof and a pressure member, preferably operated with the thumb, and connected adjacent its forward end to the pull member and/or release member, the rear end of the pressure member being pivotable about the forward end thereof. A release pin projects from the pressure member at an angle generally transverse to the longitudinal axis of the pull member. The release member preferably comprises a closed loop engageable with the pin and the pressure member usually comprises a generally flat plate intersecting the pull member at a controllable angle and disposed adjacent one side thereof. The angle of intersection may be limited by an adjustable slide member. The lengths of the pin and loop are also adjustable, thus permitting fine control over the ease and rapidity of release of the loop from around a drawn bowstring during shooting of a bow.

3,800,775

TARGET THROWING ARM WITH TARGET DETENT MECHANISM

George H. Darrell, 25 Chestnut, Dedham, Mass.

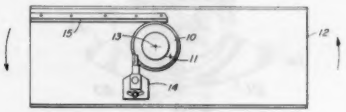
Filed Mar. 22, 1973, Ser. No. 343,636

Int. Cl. F41b *3/00*

U.S. Cl. 124—43 **7 Claims**

An eccentrically disposed target on a rotating platform is released by a mechanism which includes a detent carried by

the platform and engaging a forward edge of the target whereby the target is restrained from moving along the surface of the platform under the influence of the centrifugal forces exerted on the target by the rotation of the platform. In order to release the target the detent, which is mounted on a rotatable shaft, is moved out of the path of motion of the target by rotation of the shaft at such a speed that the portion of the detent which had engaged the target moves away from the target with a horizontal component of velocity, along the path of travel of the target, greater then the velocity at which the target moves along the surface of the platform under the influence of the centrifugal forces. A bent shaft with a resilient sleeve on the free end that engages a target may be used as a detent.



3,800,776

MANUAL DRESSING APPARATUS

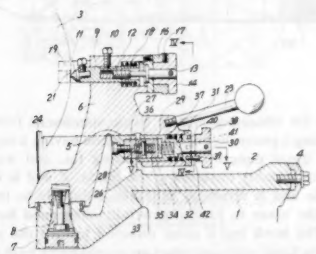
Akiyoshi Kobayashi, Kariya, and Kiyoshi Miyagawa, Anjo, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-Ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,781

Claims priority, application Japan, Dec. 24, 1970, 45-131416

Int. Cl. B24b *53/04*

U.S. Cl. 125—11 AT **11 Claims**



In a dressing apparatus for manually dressing a grinding wheel, a dressing housing is slidably mounted on a supporting bracket being pivoted thereto by a pivot pin for permitting sliding movement only in a horizontal plane. A shaft carrying a dressing tool is slidably but non-rotatably received in the dressing housing for adjusting the axial position of the dressing tool. A positioning member having a reference edge which is spaced apart from the pivot pin by a predetermined distance is carried by the dressing housing and means are provided for indicating the position of the dressing tool relative to the reference edge. In addition, the dressing housing is adapted to selectively be rotated freely and within predetermined limits on the supporting bracket and to be locked against rotation relative thereto.

3,800,777

SELF-CLEANING GRILL FOR PORTABLE CHARCOAL COOKING UNIT

Willard Gebien, Mundelein, Ill., assignor to Bel-Air Tool Die & Engineering Co., Chicago, Ill.

Filed Apr. 5, 1972, Ser. No. 241,200

Int. Cl. F24b *3/00*

U.S. Cl. 126—25 R **10 Claims**

A formed wire grill for a portable cooking unit or outdoor barbeque which is self cleaning with the application of electric power to the grill terminals.

3,800,778

DEVICE FOR STEAMING FOODS

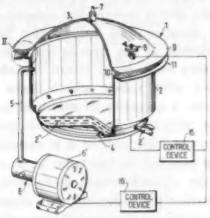
Alfred Lohr, Bochum; Wolfgang Schwan, Gelsenkirchen-Buer, and Wolfgang Tscheck, Westerholt, all of Germany, assignors to F. Kuppersbusch & Sohne Aktiengesellschaft, Gelsenkirchen, Germany

Filed Apr. 3, 1972, Ser. No. 240,640

Claims priority, application Germany, Apr. 2, 1971, 2116140

Int. Cl. A47j *27/04*

U.S. Cl. 126—369 **3 Claims**



Steam, generated in a steam cooker for foods, is controlled, with respect to the temperature of the steam, over both a range of steam pressure valves in excess of atmospheric pressure and a range of subatmospheric pressure valves.

3,800,779

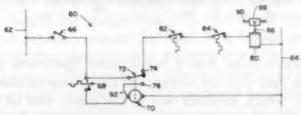
MELT CYCLE CONTROL SYSTEM

Lewis Frank Moore, and George McNair Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Filed Feb. 5, 1973, Ser. No. 329,377

Int. Cl. A47j *37/12, 36/32*

U.S. Cl. 126—374 **10 Claims**



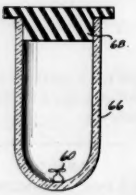
A system for controlling and regulating heat input to a commercial frypot during the melting of solid shortening in the

frypot comprises a timer motor which operates through a bypass switch to cyclically enable and disable the burners of the frypot. A melt thermostat is responsive to the presence of warm liquid shortening at a predetermined level in the frypot, and upon actuation functions to automatically transfer control over the operation of the frypot to conventional instrumentalities, such as a high limit thermostat and an operating thermostat.

3,800,780
VACUUM INDICATOR

John Elliott, Philadelphia, Pa., assignor to Angelika Elliott, London, England

Filed Feb. 23, 1972, Ser. No. 228,687
Int. Cl. A61m *1/00*
U.S. Cl. 128—2 F **4 Claims**

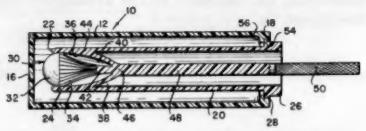


An apparatus for withdrawing blood from a body vessel of the type including a tube with a partial vacuum pressure therein sealed at an open end by a flexible stopper, a needle having a sharp end for penetrating a vessel, an interior blood carrying cavity, an opposite sharp end, and a sleeve attachable to the needle so that the opposite end of the needle extends into the sleeve and adapted for receiving the stopper so that, when the one needle end penetrates the vessel, the stopper moves within the sleeve toward the opposite needle end which punctures the stopper and causes the blood to be drawn through the interior of the needle into the tube. In order to avoid unnecessary damage to blood vessels from attempts to withdraw blood with tubes which have lost their partial vacuum pressure, a quantity of material such as hemoglobin having a color which varies with the pressure about it is disposed within the tube before it is evacuated. The material can be dry and painted on the tube walls or liquid. Other indicators include cytochrome, myoglobin, heme and leucobases. In a further embodiment, two objects which have different air resistances, so that in full or partial pressure they fall under the influence of gravity, are disposed within the tube.

3,800,781
SPECIMEN-TAKING DEVICE

Kazimierz Zalucki, 7 Holyoke St., Easthampton, Mass.

Filed May 30, 1972, Ser. No. 257,595
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **9 Claims**

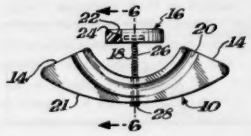


A cylindrical tube has a retractable specimen gathering piece at one end thereof connected to a reciprocable activating member which extends out of the other end of the tube, the tube having a cylindrical cover into which the specimen gathering end thereof is inserted, the cover containing information identifying the person from whom the specimen is taken.

3,800,782
SWALLOW DIAGNOSTIC DEVICE

Albert Josephson, 3 W. Salisbury Dr., Edgemoor Terr., and Fred S. Fink, 1714 Gunning Dr., Forest Hills Park, both of Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,567
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 S **10 Claims**

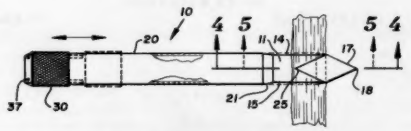


A device for diagnosing an abnormal human swallow comprises a support member for fitting over the teeth of the user with the shaft slidably mounted at one end in the support member and a contact member mounted at the other end of the shaft for being disposed in the mouth of the user and with resilient means acting between the support member and contact member to hold the contact member at a relatively fixed distance from the support member during a normal swallow and to permit the shaft to slidably project from the support member during an abnormal swallow by the force of the tongue against the contact member.

3,800,783
MUSCLE BIOPSY DEVICE

Khosrow Jamshidi, 5315 Minnehaha Ave., Minneapolis, Minn.

Filed June 22, 1972, Ser. No. 265,280
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **2 Claims**



Mean for obtaining muscle tissue specimens from a body comprising a generally rectangular blade having a tapered and pointed distal puncturing and cutting tip, and with sheath means for slidably enveloping the blade. A slot is formed in the blade and is arranged generally obliquely to the central axis of the blade to form a generally sharpened hook in the blade. The hook has a point directed toward the proximate end of the blade and comprises an overhanging barb forming a sample-retaining cavity. The blade is slidable within the sheath between retracted and extended dispositions, with the forward edges of the sheath enclosing the barb when the blade is in retracted disposition, and with the sharpened tip of the barb being exposed when the blade is in extended disposition.

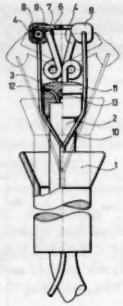
3,800,784
MEDICAL INSTRUMENT FOR EXAMINING A FETUS DURING DELIVERY

Janos Kiszel, and Laszlo Papp, both of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed July 11, 1972, Ser. No. 270,681
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **6 Claims**

A medical instrument for examining a fetus during delivery, comprising an electrode carried by a normally closed clip

spring for connection to the fetus, and an electrode for engaging the mother, both electrodes being connected to wires that extend through an electric cable. A tool slides on the cable and has filaments connected to it such that when the tool is



pulled toward the user, the filaments spread the springs to open and release the device; and when the tool is released, then it is pulled forward on the cable by the filaments and permits the spring to close on the fetus for connection or for insertion and removal of the instrument.

3,800,785

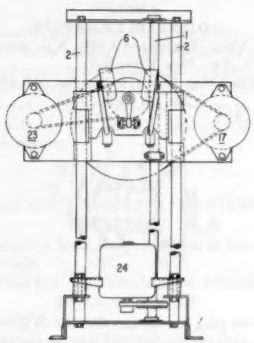
ELECTROMASSAGER

Nichimu Inada, 4-25 Smorofuku 5-chome, Daito-shi, Osaka, Japan

Filed Sept. 15, 1972, Ser. No. 289,568

Int. Cl. A61h *7/00*

U.S. Cl. 128—52 **6 Claims**



An electromassager for massaging action which includes means for obtaining a horizontal massaging movement and a vertical tapping movement.

3,800,786

DENTAL CLEANING AND MASSAGING DEVICE

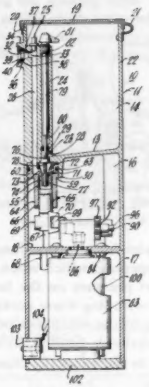
Leslie J. Kovach, 880 Fifth Ave., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,458

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **14 Claims**

A dental cleaning and massaging device includes an elongated hollow hand-held member divided by a partition into an upper water reservoir and a lower compartment, and an elongated nozzle is plugged into a socket in the upper side wall of the hand-held member and is angularly adjustable about transverse and longitudinal axes. A motor driven piston pump is housed in the lower compartment, the pump cylinder being connected to the nozzle by way of a passageway leading to the



socket and to the reservoir by way of a check valve which is opened by the pump suction stroke. A stop member in the path of the check valve is adjustable to limit the closed position of the check valve and hence the pressure volume and velocity of the water jet from the nozzle.

3,800,787

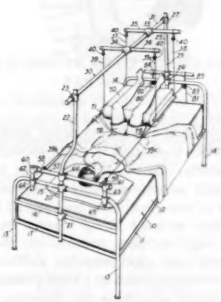
90/90 TRACTION BOARD

Charles D. Rush, Rt. 4, Box 324E, Albany, Ga.

Filed July 12, 1972, Ser. No. 271,145

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **5 Claims**



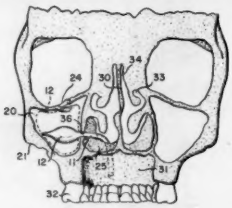
A 90/90 traction device having a bed with an overhead traction frame, from which is suspended, by cables, a horizontal traction board for supporting the calves of the legs in a horizontal position above the bed. Leg bands connected to weighted cables passing over pulleys at the foot of the bed apply traction to the vertically disposed thighs of the legs. The board is provided with resilient material over the front and top, so as to prevent loss of circulation in the legs and is provided with arresting cables attached to the head of the bed to prevent movement of the board toward the foot of the bed. The various cables are adjustable in length.

3,800,788

ANTRAL CATHETER FOR REDUCTION OF FRACTURES

Norman S. White, 320 E. North Ave., Pittsburgh, Pa.

Filed July 12, 1972, Ser. No. 271,197
Int. Cl. A61f 5/04
U.S. Cl. 128—83 3 Claims



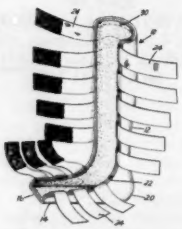
An inflatable catheter for insertion into the maxillary sinus cavity via the nasal opening, which when inflated with sterile water or air will exert pressure on the bone surrounding the sinus and will move intruding bone portions such as may be present upon fracture of the maxilla or other bones to reduce such fracture. The catheter head is formed of a pyramidal shape as to conform to the generally triangular configuration of the maxillary sinus.

3,800,789

JOINT-IMMOBILIZING TEMPORARY SPLINT

Robert P. Schloss, Apt. 701, Three Rivers North, Fort Wayne, Ind.

Filed Oct. 13, 1972, Ser. No. 297,407
Int. Cl. A61f 5/04
U.S. Cl. 128—90 5 Claims



A joint-immobilizing temporary splint comprising an elongated rigid member U-shaped in cross section having at least two parts angularly related, said member being contoured both longitudinally and transversely to approximate the shape of the posterior of two predetermined joined limb elements, a plurality of straps secured along lengths between the ends thereof to said rigid member transversely thereof, said ends extending beyond said rigid member sufficiently to overlap each other after being applied to a limb element being treated, means for adjustably attaching the opposite ends of a given strap together to fit snugly around a limb element, and a number of said straps being on each of said two parts.

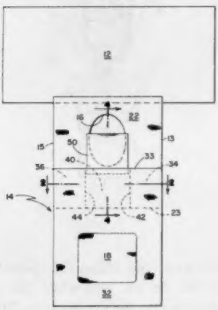
3,800,790

SURGICAL DRAPE WITH PROTECTED ACCESS OPENING

Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 14, 1972, Ser. No. 225,846
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D 5 Claims

A surgical drape comprising a pair of coextensive, parallel, flexible fabric element means bonded to one another in spaced areas providing an interior unbonded area therebetween with slit opening means providing access to the unbonded area past the fabric element means. The slit opening means are parallel to and perpendicularly spaced from one another across the unbonded area providing a protected access opening through the pair of fabric element means extended in the plane thereof, said spaced bonded areas maintaining the fabric element slit opening means throughout the unbonded area closely adjacent to one another in normally



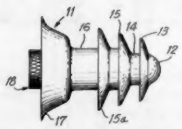
closed position to restrict passage of material through said access opening and manually openable for access therethrough. The drape may also include an enclosed flexible pocket element having an open end bonded around the periphery of one of the opening means for manual access to the interior of the pocket element through said drape and an access fenestration directly through the drape spaced from the access slit opening means and the unbonded area therebetween, the slit opening means restricting passage of material from the access fenestration into the pocket element.

3,800,791

ADJUSTABLE EAR PLUG

Frederick C. Visor, Englewood Cliffs, N.J., assignor to Flents Products Co., Inc., New York, N.Y.

Filed May 15, 1973, Ser. No. 360,482
Int. Cl. A61f 11/02
U.S. Cl. 128—152 16 Claims



A flexible ear plug has flanges thereon of gradually increasing size. The plug can be inserted into an auditory canal after which the diameter of the flanges can be increased by forcing an insert into a cavity in the plug. One size plug, due to the variation in the diameters of the flanges and the fact that the diameters can be increased by use of the insert, fits all sizes of auditory canals.

3,800,792

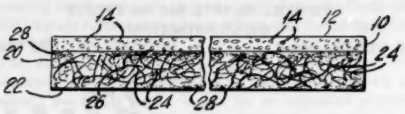
LAMINATED COLLAGEN FILM DRESSING

James J. McKnight, Martinsville, and Jack Guidalian, Jr., Laurence Twp., Mercer County, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 17, 1972, Ser. No. 244,439
Int. Cl. A61l 15/00
U.S. Cl. 128—156 7 Claims

A surgical dressing that is particularly useful for the treatment of burn wounds is disclosed made from a thicker layer of

a collagen compressed foam film to which has been laminated, without any adhesive, a thin continuous layer of an inert polymer material, such as polyurethane, having a moisture



vapor transmission rate slightly higher than that of human skin and which preferably also contains finely divided silver metal impregnated in the collagen layer.

3,800,793

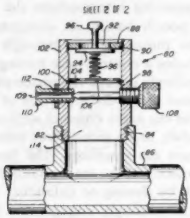
ANESTHESIA APPARATUS HAVING NEGATIVE PRESSURE RELIEF MEANS

Rocco Anthony Marrese, 1125-A Peterson Ave., Park Ridge, Ill., and William T. O'Sullivan, 4547 Valleyview, Orchard Lake, Mich.

Filed Dec. 23, 1971, Ser. No. 211,592

Int. Cl. A61m *17/00*; **F16k** *45/00*

U.S. Cl. 128—188 **5 Claims**



An anesthesia apparatus having a negative pressure relief valve mounted on an anesthetic gas conduit to prevent excessive negative pressure levels. The valve is provided with a handle for manual operation to vent positive pressure increase and is also provided with a valved connection to a vacuum line to vent alternatively any positive pressure increase into a closed vacuum system.

3,800,794

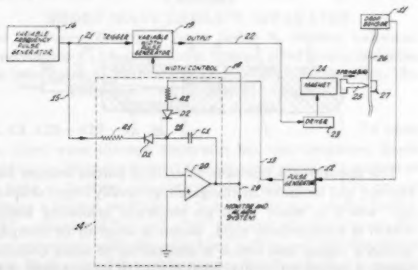
METHOD AND APPARATUS FOR FLUID FLOW CONTROL

Heinz W. Georgi, La Jolla, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Dec. 30, 1970, Ser. No. 102,665

Int. Cl. A61m *05/00*

U.S. Cl. 128—214 E **34 Claims**



A method and apparatus for parenteral administration of medical fluids, wherein a normally shut-off intravenous feeding tube is selectively opened at a frequency and open period duration automatically regulated by a digital control system to establish a fluid flow rate at any selected rate over a wide dynamic range. Measured and desired flow rates are converted to digital electrical signals and compared, the electrical difference being used to vary a control voltage which establishes the width of energizing pulses controlling a member for opening the feeding tube. The frequency of the energizing pulses is a high, preferably non-integral, multiple of the desired drop flow rate. Appropriate alarms respond to out-of-limit conditions indicated by the magnitude of the control voltage.

3,800,795

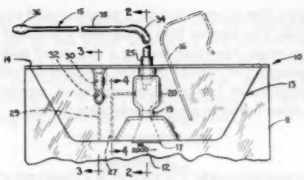
URINARY DRAINAGE COLLECTING DEVICE

Clarence L. Walker, Webster Groves, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed June 16, 1971, Ser. No. 153,563

Int. Cl. A61f *5/44*

U.S. Cl. 128—275 **12 Claims**



A closed urinary drainage set adapted to collect urine from a patient. The set includes a connecting tube terminating at its distal end in an irregular opening disposed in a vented chamber and communicating with a collapsible bag through a unidirectional valve. Means are further provided for venting the bag to atmosphere. The device provides a closed system drainage positively preventing backflow of urine and preventing a continuous column of urine in the connecting tube.

3,800,796

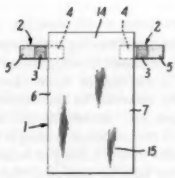
DISPOSABLE DIAPER WITH SEMIELASTIC STRIP FASTENERS

Ezekiel J. Jacob, 25 Monroe Pl., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 142,688, May 12, 1971, abandoned. This application Apr. 13, 1972, Ser. No. 243,751

Int. Cl. A41b *13/02*

U.S. Cl. 128—284 **9 Claims**



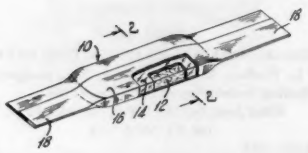
A disposable diaper is provided with semielastic strip fasteners having a freely extensible elastic central segment and two nonextensible inelastic terminal segments, which fasteners serve to bond together strongly the front and rear panels of the diaper when the diaper is worn and provide comfortable elastic extensible side waistbands.

3,800,797

BODY FLUID BARRIER FILMS

Deger Tunc, Edison, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 15, 1973, Ser. No. 323,664
Int. Cl. A61f 13/16
U.S. Cl. 128—290 R 10 Claims



A barrier film is provided for a product used in contact with body fluids. The barrier film comprises a sulfated alkali cellulose ether resin, the resin having a degree of sulfate substitution satisfactory to render the film resistant to body fluids and yet dispersible in low salt concentration aqueous solutions such as those found in a household water closet.

3,800,798

HYDROPHOBIC CATHETER CONSTRUCTION

Alvin L. Winkler, 5521 W. 102 St., Oak Lawn, Ill.

Filed July 11, 1972, Ser. No. 270,640
Int. Cl. A61m 25/00
U.S. Cl. 128—349 R 10 Claims

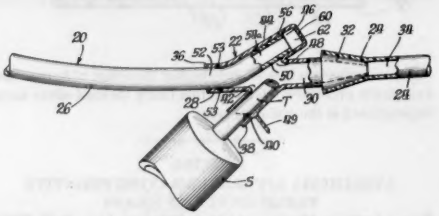
A catheter construction having a hydrophobic inner surface adapted to provide extended blockage-free use. The inner surface is defined by a coating of hydrophobic silicon dioxide. The coating may be adhered to the catheter tubular wall by heat fusion, adhesive, etc., means. In one heat fusion method, the inside surface of the catheter tubing is heated while maintaining the remainder of the tubing at relatively low temperature to maintain the tubular integrity thereof while bonding the hydrophobic material to the heated wall surface. In another method of producing the catheter, powdered hydrophobic material is packed in the tubing and the packed tubing is suitably treated to effect the desired coating whereupon the remaining particulate material is removed from the tubing as by fluid flow therethrough. In still another method of forming the catheter construction, the tubing and coating may be effectively concurrently formed.

3,800,799

IRRIGATION ADAPTER

Daniel M. McWhorter, Arlington Heights, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Oct. 20, 1972, Ser. No. 299,515
Int. Cl. A61m 25/00
U.S. Cl. 128—349 R 15 Claims



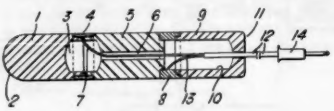
An irrigation adapter which is connectable to a catheter and a drainage tube in a liquid drainage system. The adapter includes a flexible body member having a longitudinally extending main channel, a side arm having a channel extending through the side arm and communicating with the main channel through an opening intermediate the ends of the body member, and a pouch having an elongated cavity communicating with the main channel through an opening. The adapter also includes a control tube having an outside diameter of a size to sealingly engage the inside of the body member in the main channel of the distal portion of the body member, a first end fixed in the main channel adjacent a proximal end of the body member, and a second free end extending into the body member past the openings. The free end is movable between a first position in the main channel and a second position in the pouch by flexing or extending the body member. Thus, the free end sealingly engages the inside of the body member in the first position to prevent passage of liquid into the side arm and permit liquid drainage through the adapter, and the free end is receivable in the pouch cavity in the second position to close the drainage tube and permit irrigation of the catheter through the side arm.

3,800,800

APPARATUS AND METHOD FOR INCONTINENCE CONTROL

Dietmar Rudolf Garbe, Maid Morton House, Buckingham, England, and Harry McDonnell, 55 Ardrossan Rd., Seamill, Scotland

Continuation-in-part of Ser. No. 859,136, Sept. 18, 1969, abandoned. This application Jan. 24, 1972, Ser. No. 220,341
Claims priority, application Great Britain, Sept. 20, 1968, 50930/68
Int. Cl. A61n 1/36
U.S. Cl. 128—408 26 Claims



The apparatus is operable to control female urinary incontinence and includes an elongated, generally finger shaped insert which is made from an electrical insulating material, which is substantially rigid, which is sized to fit completely within a vagina and which is adapted to be worn completely within a vagina for an extended period of time. A pair of electrodes are spaced apart along the length of the insert and connections are provided for connecting the electrodes to a source of electric potential located within or without the in-

sert. Each one of the electrodes is located on the periphery of the insert so as to be in position to contact internal surface areas of the vagina when the insert is placed therein for the purpose of applying an electric signal to surface areas for tetanizing relevant muscle tissue located within the body proximate vaginal surface areas located between the surface areas contacted by the electrodes.

The method includes the steps of inserting the insert completely within the vagina of an incontinent female and retaining the insert in the vagina for an extended period of time while simultaneously applying to the electrodes on the insert a signal which is defined by a plurality of pulses each having a peak voltage of up to 20 volts and a duration of from 10 to 300 microseconds. Preferably the pulses are generated at a frequency of from 25 to 200 pulses per second.

3,800,801

HEART STIMULATION APPARATUS AND METHOD OF TESTING ITS INSTALLATION

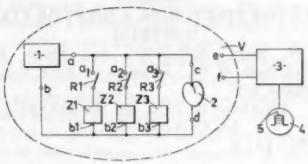
Robert Maurice Georges Gaillard, Paris, France, assignor to L'Electronique Medicale S.E.R.D.A.L. S.A., Paris, France

Filed Dec. 27, 1972, Ser. No. 318,938

Claims priority, application France, Dec. 28, 1971, 71.47064

Int. Cl. A61n *01/36*

U.S. Cl. 128—419 P **10 Claims**



Heart stimulation apparatus, which is constructed as an implantable unit including a heart stimulator, terminal electrodes of the heart stimulator connectable to a patient's heart and a number of different shunts connected in parallel across the terminal electrodes each shunt having a separate remotely operable isolating switch, operable magnetically and a Zener diode, the known trigger voltage of each Zener diode being different. In use the shunts are remotely switched magnetically from the exterior of the patient, starting from the shunt of highest trigger voltage, until an electrocardiograph connected to the patient indicates a change in the voltage reading corresponding to the one of the known trigger voltages. It is thus possible to determine the value of the pulse potential of the heart stimulator. By switching in, for a short time, a shunt having relatively low trigger voltage, the stimulation threshold of the patient's heart can be determined.

3,800,802

SHORT-WAVE THERAPY APPARATUS

Fred M. Berry, Overland Park; James N. Shirley, Leawood, and Eugene C. Lipsky, Prairie Village, all of Kans., assignors to International Medical Electronics Ltd., Kansas City, Mo.

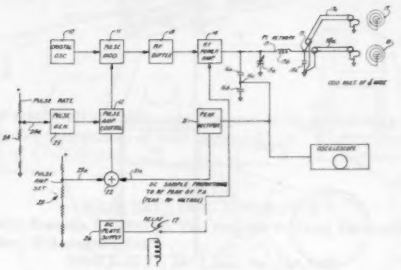
Filed Jan. 7, 1972, Ser. No. 216,069

Int. Cl. A61n *1/40*

U.S. Cl. 128—422 **7 Claims**

A short wave therapy apparatus has two treatment heads enabling an operator to treat two separate areas of a patient at one time or to treat two patients simultaneously. The circuit includes a crystal oscillator, a pulse modulator, an RF buffer, an RF power amplifier and a "pi" network which precedes the interconnection with the attaching cables and the treatment heads. Each one of the cables is specifically selected in length so that it will be approximately a quarter wave electrical length thereby fixed tuning each one of the heads, varied only in ½ wave electrical lengths.

An RF sample is picked off of the output from the RF power amplifier through a capacitive divider. The RF sample is fed back through a peak rectifier to a summing point where it is compared with the voltage on a pulse amplitude reference step switch and is delivered to a pulse amplitude control circuit. Further, a pulse generator and pulse rate control circuits are connected to the pulse modulator for control purposes. Accordingly, the correct power amplitude is maintained regardless of the loading on the particular heads. An oscilloscope is connected to the capacitive divider for the purpose of monitoring the operation of the apparatus.



ERRATUM

For Class 128—83.5 see:
Patent No. 3,800,376

3,800,803

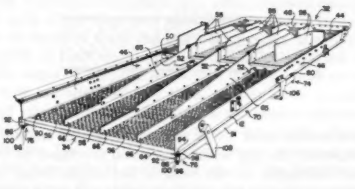
COMBINE SIEVE SUPPORT

Paul L. Rouse, Moline, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 8, 1973, Ser. No. 330,769

Int. Cl. A01f *12/44*

U.S. Cl. 130—24 **10 Claims**



A chaffer sieve support for a combine harvester which facilitates sieve installation and removal and also confines the grain to the cleaning area of the sieve so that there will be no passage of grain laterally over the side frame members thereof. A pair of support angles embrace the side frame members of the chaffer sieve and are pivoted at their forward ends to the side rails of the grain pan for limited swinging movement between a raised clamped position wherein, in combination with a pair of lateral flanges on the grain pan side rails, they define sieve-receiving channels, and a lowered inclined position wherein they release the sieve and, in effect, provide a ramp on which the sieve may be slid rearwardly and downwardly for removal purposes. In the raised position of the support angles, the side frame members of the chaffer sieve are entirely confined within the chanels and thus only the effective cleaning area of the sieve is exposed to the grain for cleaning purposes.

3,800,804

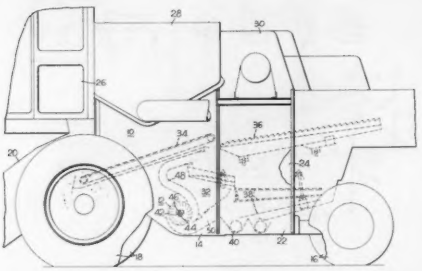
DOUBLE OUTLET TRANSVERSE FAN

Jerry C. Boone, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 5, 1973, Ser. No. 329,598

Int. Cl. A01f *12/44*

U.S. Cl. 130—27 HF **5 Claims**



A transverse fan for use in the cleaning and separating system of a combine harvester and wherein such transverse fan is provided with a splitter mechanism for dividing the air discharged by such fan into two streams, one used in conjunction with the separating portion of the combine and the other used in conjunction with the cleaning portion of such combine.

3,800,805

SMOKING ARTICLES

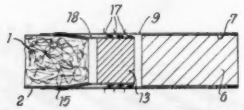
Henry G. Horsewell, Totton; James W. P. Phelpstead, Hedge End, and Geoffrey O. Brooks, Botley, all of England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 3, 1972, Ser. No. 294,691

Claims priority, application Great Britain, Oct. 11, 1971, 47237/71

Int. Cl. A24d *01/10*

U.S. Cl. 131—10.3 **2 Claims**



This invention relates to a smoking article or smoking-article component having wrapped around it a band or strip of material shrinkable by the heat of hot smoke from the approaching coal when the article is smoked. Such a band may be wrapped around the tobacco rod of the article near the end to be placed in the mouth, around a filter or mouthpiece or around a body of smoke-impermeable material disposed between the tobacco rod and a filter or mouthpiece. Such a band may also be disposed inside a wrapping section of perforated or air-pervious material so as to close the said material against the passage of air until shrinkage occurs.

3,800,806

DEPOSITION OF MENTHOL ON TOBACCO

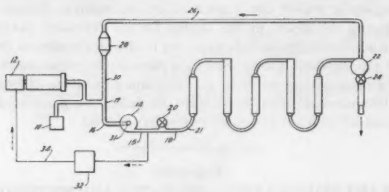
Jon F. Banks, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 30, 1971, Ser. No. 203,206

Int. Cl. A24b *03/12*

U.S. Cl. 131—144 **6 Claims**

Tobacco is treated by introducing a tobacco flavorant vapor such as menthol vapor into a conduit an pneumatically conveying the vapor through the conduit. The air in the conduit being maintained at a temperature of from about 75° to 150° F and above the vaporizing temperature of the flavorant. Tobacco is injected into the conduit at a point downstream from the vapor injection. The flavorant vapor is uniformly deposited on the tobacco as it is carried down the conduit. A predetermined level of flavorant is maintained in the conduit through which the tobacco and flavorant vapor are pneumatically conveyed.



3,800,807

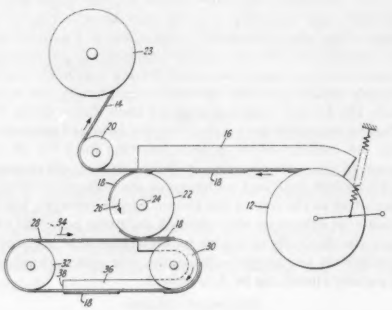
DEVICE FOR STRETCHING A SHEET OR STRIP OF MATERIAL

Gordon W. Hays, Midlothian, and Frank Hollenton, Richmond, both of Va., assignors to AMF Incorporated, White Plains, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,543

Int. Cl. A24b *5/04, 5/14*

U.S. Cl. 131—147 R **9 Claims**



A method of smoothing tobacco leaf elements or the like, comprising the steps of driving each periphery of a cylindrical, perforated, stretchable band about axes inclined to the axis of the cylinder, the angles of inclination being of opposite senses, to stretch the band laterally from a first dimension to a second, larger, dimension and back to the first dimension during each revolution of the band, conveying a succession of tobacco leaf elements to the band at a point in its path prior to said lateral second dimension, applying subatmospheric pressure to the interior of the band to transfer the tobacco leaf elements from the conveyor to the band at said point and secure the leaf elements to the band as it stretches to smooth the leaf held thereon, and removing the tobacco leaf elements from the band at a point on the band closer to the second dimension than the point thereon the leaf was transferred thereto.

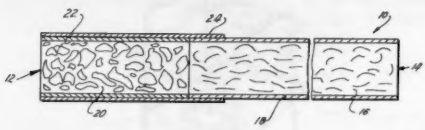
3,800,808
TOBACCO SMOKE FILTER

Martin Lance Reynolds, Anchorage, Ky., and James R. Hammersmith, Jeffersonville, Ind., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 33,621, May 1, 1970, abandoned, Continuation-in-part of Ser. No. 849,384, Aug. 12, 1969, abandoned. This application Nov. 26, 1971, Ser. No. 202,148

Int. Cl. A24d *01/04*

U.S. Cl. 131—267 **4 Claims**



An improved tobacco smoke filter is provided for cigarettes and the like formed of a bed or rod of shreds of a porous cellulose ester material having a low packing density and an increased surface area which is readily accessible to the smoke aerosol for deposition of smoke particles. The filter draw resistance comprises a pressure drop at or below 2.5 inches of water. The cellulose ester material in shred form has a surface area of from about 0.6 to 3.0 square meters per gram, a mean pore diameter of from about 2 to 20 microns, and a porosity of between 65 percent and 90 percent. The width and thickness of the shreds should be between about 0.25–2.0 mm and 0.025–0.25 mm, respectively. The shreds are formed by casting a dope of the cellulose ester dissolved in solvent and plasticizer in which starch and saline solution are present. The cast sheet is washed to remove the salt and enzymatically treated to remove the starch and thus form the porous structure.

3,800,809
BLEACHING COMPOSITION FOR PERMANENTLY DYED HAIR AND METHOD OF USE

Hosny Y. Saad, Suffern, N.Y.; Fred M. Tuffile, Lakeville, Mass.; Andrew J. Cunningham, Highland Lakes, N.J., and Philip Franco, Suffern, N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,804

Int. Cl. A45d *19/00*; **A61k** *7/12*; **D06l** *3/16*

U.S. Cl. 132—7 **9 Claims**

A process and composition for removing dye material from keratin fibers, such as human hair, to produce fibers having the desired color shade and which will be stable to oxidation. More particularly, a process for removing dye material, such as oxidative dyes, from human hair by subjecting the fibers to compositions containing dye reducing agents, such as metal sulfoxylate-formaldehyde, urea or thioureas, in combination with a stabilizing agent of the alkali metal bisulfate class. The treated fiber has been found to inhibit the redevelopment of the undesired color.

3,800,810
APPLIANCE CONSTRUCTION FOR USE AS A HAIRDRESSING TOOL AND AS A STEAM IRON

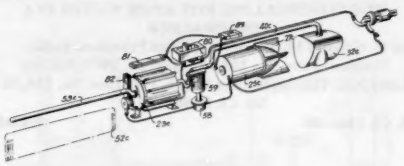
Norman J. Mercer, 575 Park Ave., New York, N.Y.

Continuation-in-part of Ser. No. 127,184, March 23, 1971, Pat. No. 3,702,616. This application May 20, 1971, Ser. No. 146,571

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **14 Claims**

An appliance including an elongate hand-held body having a working head on one end carrying fluid dispensing means, and fluid heating means in a body for heating fluid dispensed,



and selectively operable actuating means for determining the type and temperature of fluid dispensed.

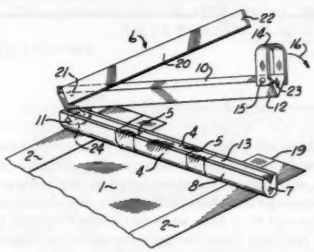
3,800,811
HAIR TREATING APPARATUS

Victor Esposto, Pittsburgh, Pa., assignor to Frost Enterprises, Inc., Wilmington, Del.

Filed June 21, 1972, Ser. No. 264,905

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **8 Claims**



A method and apparatus for sealing off preselected portions of hair on a subject for treatment without affecting the untreated portions. A strip of flexible non-porous material (preferably transparent) is positioned with one end thereof underlying strands of hair selected from the subject such that it extends lengthwise therewith. The other exposed end of the flexible strip which does not underly the selected strands of hair (or is opposite from the end adjacent the hair roots) is folded back on itself over top of the hair strands and the overlying side edges of the strip are sealed together with portions of the hair strands enclosed therebetween. The remaining open end edges of the flexible strip are clamped transversely in a sealed relationship with the hair strands disposed therebetween. The portion of the hair strand enclosed within the flexible strip prior to sealing the same or the remaining exposed portions of the hair strands adjacent the hair roots may be treated after the flexible strip is sealed as desired.

3,800,812
DENTAL FLOSS AND METHOD OF MAKING SAME

Paul E. Jaffe, Scarsdale, N.Y., assignor to Pauldan Industries, Inc., New York, N.Y.

Filed Nov. 27, 1972, Ser. No. 309,878

Int. Cl. A61c *15/00*

U.S. Cl. 132—89 **13 Claims**

A polyester elastomer is extruded into a hot and tacky tape having certain tensile properties when cooled, including a high degree of stretchability; and by subsequent stretching of the cooled product, its break strength is substantially increased while it develops desirable elastomeric properties. The tape is cut into strips of dental floss of 1-½ to 10 mils thickness either before or after the stretching, and abrasive particles and a flavoring agent may be incorporated into the tape material or applied to the tape surface.

3,800,813

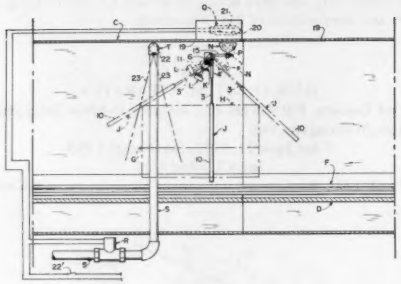
SWINGABLE COMB FOR CLOSING MAGNETIC SWITCH FOR CONTROLLING HOT RINSE WATER IN A DISHWASHER

Tore H. Noren, 1350 Donner Ave., San Francisco, Calif.

Division of Ser. No. 105,471, Jan. 11, 1971, Pat. No. 3,669,346. This application May 1, 1972, Ser. No. 249,301

Int. Cl. B08b *3/02*

U.S. Cl. 134—46 6 Claims



A dishwashing machine having a hot water rinse compartment through which a train of dish-carrying dollies is moved and a switch actuating comb is mounted in the compartment and has depending tines that are swung in one direction by a dish basket carried by a dolly so as to close a magnetic switch that opens a solenoid valve for spraying hot rinse water onto the dishes. The comb tines are so mounted that they can freely swing in the opposite direction should it become necessary to reverse the movement of a dolly and its dish basket in the rinse compartment and the magnetic switch will not be closed and neither will the tines be damaged during this movement.

3,800,814

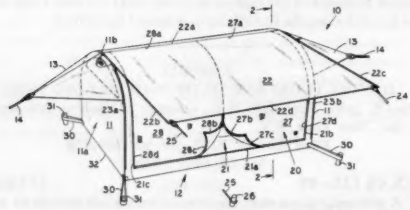
BACK PACK TENT OF QUONSET DESIGN WITH SIDE OPENING FOR ENTRANCE

Wayne Greenlee Hibbert, Trenton, N.J., assignor to Atlantic Products Corporation, Trenton, N.J.

Filed Oct. 25, 1972, Ser. No. 300,684

Int. Cl. A45f *1/00*

U.S. Cl. 135—1 R 6 Claims



A tent which is collapsible and may be easily rolled into a pack for carrying, having a quonset shape and providing entry through an opening which extends along one side substantially the entire length of the tent.

3,800,815

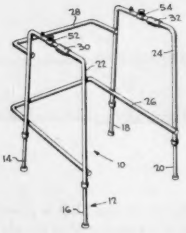
INVALID WALKER

Donald G. Birk, Colorado Springs, Colo., assignor to Royalty Designs Corporation, Colorado Springs, Colo.

Filed July 26, 1972, Ser. No. 275,261

Int. Cl. A45b *1/00*; A61h *3/06*

U.S. Cl. 135—45 A 1 Claim



A novel invalid walker is disclosed for use by injured or crippled persons to steady such persons and support them during walking or standing in a substantially erect position. The walker is particularly designed to assist the user thereof in ascending or descending staircases and the like. In the preferred inventive embodiment, the invalid walker comprises a hollow tubular frame member by which the user of the apparatus can be supported and steadied. A plurality of legs downwardly depend from the frame member and will be seen to constitute, in the preferred embodiment, two pairs of front and rear legs disposed to either side and telescopically mounted within the tubular frame in the fashion of a piston. The tubular frame itself defines two closed hydraulic fluid lines interconnecting associated front and rear leg pairs such that movement of a front leg into the tubular frame to effect relative shortening of the front leg automatically and simultaneously brings about a movement of the associated rear leg in a direction outwardly from the tubular frame so as to effect relative lengthening of the rear leg. Locking means are provided so as to lock each front and rear leg pair in any respective position, thus enabling an infinite relative adjustment between the respective lengths of a front and rear leg of a given pair. In this fashion, staircases can readily be ascended or descended by the user of the apparatus.

3,800,816

FUEL LINE SHUT OFF

John L. Follett, Fair Haven, N.Y., assignor to Follett Valves Inc., Fair Haven, N.Y.

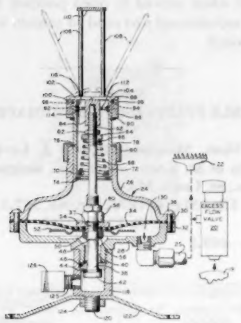
Continuation-in-part of Ser. No. 79,432, Oct. 9, 1970, abandoned. This application June 26, 1972, Ser. No. 266,369

Int. Cl. F16k *17/38*

U.S. Cl. 137—75 6 Claims

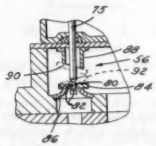
A device for providing safety shut off of a fuel line in response to an unsafe condition, such as overheating. The device includes a movable diaphragm forming a wall of an expensible chamber and a valve closure member movable with a stem connected to the diaphragm. A separate excess flow valve may be connected to the diaphragm chamber for actuation in response to expansion of the chamber by diaphragm movement. The stem is spring biased toward movement to ex-

pand the chamber and close the valve element associated with the stem. Means are provided to hold the stem against the



biasing force and are releasable by the breaking of a link when the unsafe condition is present.

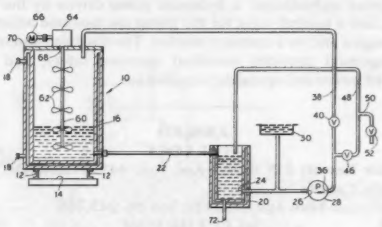
3,800,817
SELF-CLEANING ENGINE POPPET VALVE
Karl H. Gropp, Grosse Pointe Woods, and Raymond M. Hausch, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 26, 1972, Ser. No. 317,918
Int. Cl. F16k *51/00*
U.S. Cl. 137—242 **11 Claims**



A poppet type valve controlling the flow of engine exhaust carbon containing gases from one passage to another has a valve head loosely connected to the valve stem in a manner to provide an axial sliding movement of the head as well as a wobble action to reduce the tendency of carbon deposit build-up; an angled backstop member projecting into the path of opening movement of the valve head cants it in a direction opposite to that in which the valve head initially is canted by the pressure of the flow of exhaust gas against it, thereby dislodging carbon deposits between the valve head and stem.

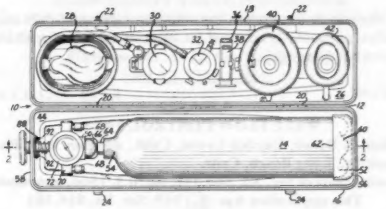
3,800,818
BULK MELTABLE SOLIDS TRANSPORT SYSTEM
Roy Francis Groat, 2720 E. 40th St., Des Moines, Iowa, and Cliff Wayne Satre, 701 Shawnee, Des Moines, Iowa
Filed Jan. 8, 1973, Ser. No. 321,741
Int. Cl. F16k *49/00*
U.S. Cl. 137—334 **3 Claims**

Bulk transport and delivery system for meltable solid materials which includes a reusable shipping container connectable to heat transfer fluid at the locus of utilization to provide a large volume reservoir of liquid material of predetermined viscosity and an associated pumping system providing a first flow circuit for closed circuit recirculation of said liquid



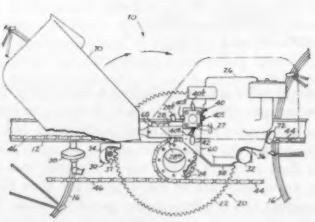
and a second flow circuit for effecting liquid delivery upon demand therefor in a second recirculating system.

3,800,819
PORTABLE OXYGEN CYLINDER ASSEMBLY
Albert E. McKee, 8335 S. Halsted St., Chicago, Ill.
Continuation of Ser. No. 67,164, Aug. 26, 1970, abandoned.
This application Oct. 16, 1972, Ser. No. 298,048
Int. Cl. F16l *5/00*
U.S. Cl. 137—343 **4 Claims**



An oxygen cylinder is releasably retained in a carrying case by a retractable handle which is arranged outside the case for manually operating a valve associated with the cylinder. To that end, a female part of the handle rotatably extends through the carrying case wall and is spring urged into withdrawable locking association with a valve stem for releasably securing the cylinder in a fixed position within the carrying case and operating the valve.

3,800,820
IRRIGATION PIPE MOVER
Harold K. Trunnell, 3520 Knob Hill Ln., Eugene, Oreg.
Filed June 14, 1972, Ser. No. 262,701
Int. Cl. B05b *9/02*
U.S. Cl. 137—344 **12 Claims**



Improved apparatus for laterally moving an elongated expanse of irrigation composition An engine powering the ap-

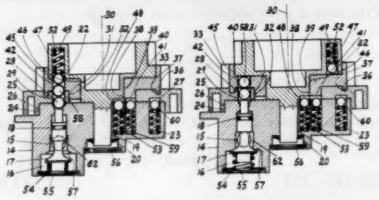
paratus is supported to one side of and below the level of an elongated beam member which extends transversely of the pipe and is supported for movement along the ground. In a preferred embodiment, a hydraulic pump driven by the engine, and a control valve for the pump are mounted adjacent the engine and on a common bracket. The disclosed mounting arrangement provides increased operator safety, and improved power and operating convenience.

3,800,821

FUEL LOCK

Sandor Kacsor, 325 Bogert Ave. Apt. 449, Willowdale, Ontario, Canada

Filed Apr. 12, 1972, Ser. No. 243,288
Int. Cl. F16k *35/08*
U.S. Cl. 137—384.4 **1 Claim**



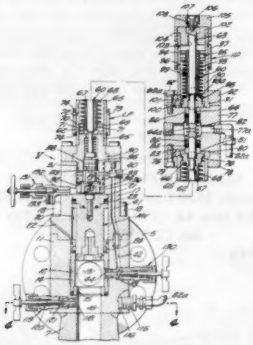
A fuel lock for preventing unauthorized operation of the vehicles, particularly adapted for vehicles equipped with internal combustion engine.

3,800,822

WELL FLOW CONTROL VALVE

William J. Baker, Garden Grove, Calif., assignor to Willis Oil Tool Co., Long Beach, Calif.

Continuation of Ser. No. 540,355, April 5, 1966, abandoned.
This application Apr. 8, 1969, Ser. No. 816,161
Int. Cl. F16k *17/10*
U.S. Cl. 137—489.5 **12 Claims**



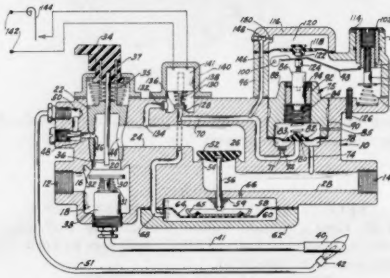
Flow control valve means including a main valve in a main valve chamber operable by flow fluid pressure to open position, and a pilot valve in a pilot valve chamber operable by means of by-passed flow fluid pressure to an open position so as to admit fluid pressure to the valve chamber and close the main valve upon decrease or increase of the flow fluid pressure with respect to a predetermined pressure range. For such purpose, the pilot valve is provided with an actuator stem which is connectable through lost motion connections for movement in a pilot valve unseating direction either by an adjustable low pressure responsive spring, or by the action of high fluid pressure above an adjustable high pressure adjustable spring. The pilot valve head, when seated in closed position, presents equalizing effective pressure surfaces to the fluid in the pilot valve chamber so that the pilot valve head will be insensitive to fluid pressure changes in the pilot valve chamber, but when moved to open position by its actuating stem will be unbalanced and tend to remain in open position until again closed.

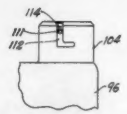
3,800,823

ADJUSTABLE STEPPED-OPENING DIAPHRAGM GAS VALVE

Charles D. Visos, Manchester; John J. Love, and Carl A. Smith, both of St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 4, 1973, Ser. No. 357,120
Int. Cl. F16k *31/12*
U.S. Cl. 137—489.5 **10 Claims**





A fluid pressure-operated gas valve device has an adjustably biased pressure regulator which controls the operating pressure and is initially biased so as to effect a first predetermined valve opening step when operating pressure is applied and a delayed action pressure-operated actuator which acts, following a brief delay, to increase the regulator bias and effect a second predetermined valve opening step. Means are included to adjustably preset two combinations of the initial and increased regulator bias, with means to conveniently shift the biasing from one preset combination to the other to adapt to one or the other of two fuel gases.

3,800,824

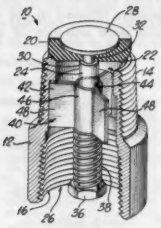
CHECK VALVE

Conrad R. Medina, Des Plaines, Ill., assignor to Mark Controls Corporation, Evanston, Ill.

Filed Mar. 12, 1973, Ser. No. 339,779
Int. Cl. F16k *15/06*
U.S. Cl. 137—541 **10 Claims**

A check valve for controlling the flow of a fluid in a fluid system includes a valve stem guide formed by an assembly of a plurality of thin, resilient members biased together in a contacting engagement and forming an elongated guide channel for the valve stem. The assembly further forms a limit or shoulder for a compression spring used to bias a poppet of the check valve to a closed condition. Each of the members of the assembly includes a plurality of segments. In an unbiased assembled condition, where N equals the number of members in

the assembly, two of the segments of each of the N members form an angle of substantially greater than 360/N degrees. In a biased assembled condition, the same two segments of each of the N members form an angle of approximately 360/N degrees.

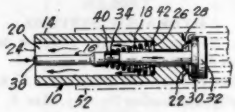


3,800,825

LIQUID DISPENSING VALVE

Andre Zoll, Laval, Quebec, Canada, assignor to Bio-Research Laboratories Ltd., Pointe Claire, Quebec, Canada

Filed Mar. 23, 1972, Ser. No. 237,311
Int. Cl. F16k *1/00*; **A01k** *7/02*
U.S. Cl. 137—544 **9 Claims**



The invention relates to a valve device having a housing including an aperture extending therethrough with a valve stem mountable and movable in said aperture, the stem being adapted to directly or indirectly seal one end of the aperture against fluid escape. The improvement comprises a stem having a recess therein and a tapering spring mountable in the aforesaid aperture, the spring having a narrower end engageable with said recess and a wider end engageable with the housing in said aperture to position said stem in sealing engagement with the aperture.

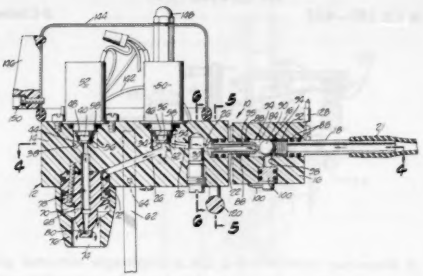
3,800,826

SOFT DRINK DISPENSER DISCONNECT ASSEMBLY

Gerald P. McCann, Glendale, Calif., assignor to McCann's Engineering & Mfg. Co., Glendale, Calif.

Filed Dec. 26, 1972, Ser. No. 318,665
Int. Cl. F16k *19/00*
U.S. Cl. 137—560 **10 Claims**

A fluid and electrical disconnect assembly for use with solenoid actuated soft drink dispensers having a disconnect block which is adapted for fluid and electrical communication with a dispenser assembly. The disconnect block carries a pair of male connectors which, when inserted in the dispenser head, make an electrical connection therewith. The disconnect block also carries a pair of fluid receiving tubes, each tube communicating with an individual valve chamber and valve. The valves are normally biased in the closed position. The dispenser head has a corresponding pair of fluid receiving tubes which are insertable into the valve chambers of the disconnect block and thereby open the valves for fluid flow therethrough. A releasable lock is carried by the dispenser head which holds the male connectors within the dispenser head thereby securing the head to the disconnect block in electrical and fluid communication therewith and allowing simple release therefrom.

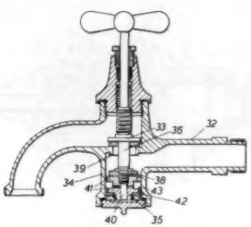


3,800,827

FLOW SAFETY VALVE FOR LIQUIDS

Franz Gonsior, Witten-Stockumg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,645
Int. Cl. F16k *17/34*
U.S. Cl. 137—614.2 **10 Claims**



The invention relates to a self-closing safety valve with automatic piston floating in the liquid, arranged in a casing together with a flow valve or in a separate casing.

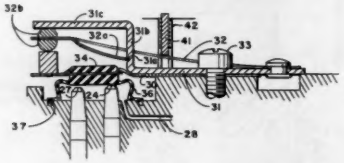
Automatically closing valves arranged in a common housing with a normal shut-off valve are known in steam boiler installations. A so-called self-closing cone is mounted in a conical connection with lower and upper guides. In the event of a pipe burst, a significant drop in tension takes place after the self-closing cone, the self-closing cone being raised by the steam flowing through it and thus being forced against the opening to shut-off the steam. To prevent the valve closing during alternating operations, the self-closing cone is held at rest by means of a spring and may be adjusted to any mode of operation by a regulating screw. This well-known steam valve can thus only operate over a closely restricted pressure range. In contrast to this, the float-piston valve which is the subject of the invention is independent of a specific pressure and provides automatic operation over any pressure range. Merely the pressure differential between the top and bottom sides of the float-piston, which is determined by the flow volume, is utilized.

3,800,828

THREE-WAY SNAP-ACTING GAS VALVE

Richard E. Nelson, Palos Verdes Peninsula, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 16, 1973, Ser. No. 324,040
Int. Cl. F16k *11/02*
U.S. Cl. 137—625 5 Claims



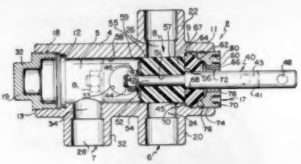
A three-way control valve for a diaphragm actuated gas valve wherein the control valve head overlies two valve seats and is supported on a cantilever tongue extending backwardly from the free end of a resilient lever and through a slot in the valve head. The tongue is inclined to the lever so as to normally engage the seat remote from the fixed end of the tongue but arranged to close and pivot about the near seat, when the free end of the lever is moved towards the seats, to open the remote seat.

3,800,829

SPOOL VALVE DEVICE

James R. Mecredy, Lakewood, Ohio, assignor to The Cleveland Range Company, Cleveland, Ohio

Filed June 1, 1972, Ser. No. 258,723
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.27 14 Claims



A valve assembly for control of pressurized fluid, such as steam, to a vessel, such as a steam cooker, including a hollow body having a bore therein. The body includes supply port means for transmitting the fluid to the vessel and discharge port means for transmitting the fluid from the vessel to a drain. A unitary, one-piece spool member made of a deformable material is mounted for movement within the bore in sealing relation with the body. A support member is mounted for movement relative to the body and the spool member is mounted adjacent one end of the support member being adapted to be moved by the support member relative to the body for sealing registration with the supply port means and discharge port means. The support member includes adjustment means adapted for coacting engagement with the spool member for selectively deforming the spool member and controlling the sealing engagement thereof with the valve body.

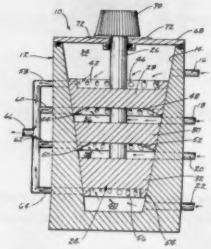
3,800,830

METERING VALVE

Berwyn E. Etter, 10355 Paradise Blvd., Treasure Island, Fla.

Filed Jan. 11, 1973, Ser. No. 322,754
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.41 7 Claims

A metering valve for metering or mixing either liquid or gases of different types is disclosed herein. The valve comprises a body portion having a chamber formed therein. A metering valve is rotatably mounted in the chamber and has a plurality of spaced apart valve elements rotatably mounted therein which have peripheral skirt portions provided thereon with a plurality of spaced apart passageways extending therethrough. A plurality of inlet conduits are in communication with the passageways formed in the valve elements and are in communication with sources of different liquids or



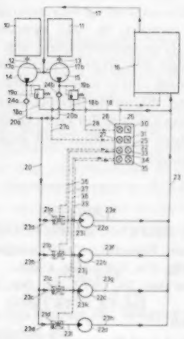
gases. A plurality of outlet conduits are in communication with the passageways formed in the valve elements. The arrangement of the valve elements and the passageways formed therein is such that all of the gases or liquids in the inlet conduits may be mixed and so that any of the gases or liquids can be excluded from the final mixture. Any combination of gases or quantities of gases may be achieved through the selective rotation of the valve elements.

3,800,831

HYDRAULIC SYSTEMS

Oyvind Tveit, Nesttun, Norway, assignor to Patents and Developments A/S, Helldale, Norway

Filed Feb. 22, 1972, Ser. No. 227,858
Claims priority, application Norway, Mar. 5, 1971, 845/71
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 11 Claims



A hydraulic system including two or more hydraulic components separately operable by means of predetermined mutually arbitrary quantities of pressure medium supplied from a common source of the latter via a common feed conduit through respective individually regulatable quantity control valves. Each quantity control valve incorporates a throttle arrangement and a control slide which are adapted to supply a maximum quantity of pressure medium to their hydraulic component by balancing the pressure on the control slide in opposite axial directions. The control slide in a first axial direction is under a pressure load in front of the throttle ar-

rangement and in an opposite axial direction under a pressure load behind the throttle arrangement plus the pressure exerted by a pressure spring. The control slide is provided with a throttle flange cooperable with a flow opening in a slide guide whereby the supply of pressure medium to the region in front of the throttle arrangement is regulated depending upon the balance position of the control slide with increasing throttling by excess pressure in the first axial direction. Furthermore, the pressure medium of the system is employed as a remote control medium by effecting a controlled "tapping off" of pressure medium from the quantity control valve via a remote control valve and an associated single conduit connection to a remotely disposed pressure discharge source. The balance position of the control slide is thus regulated and the supply of pressure medium to the hydraulic component is controlled according to need.

3,800,832

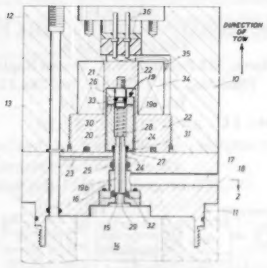
AIR GUN FIRING ASSEMBLY

Charles F. Umphenour, and Reynaldo Calderon, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,735

Int. Cl. F16k *11/02*

U.S. Cl. 137—625.65 **7 Claims**



A quick action firing assembly for charging and suddenly releasing gas under pressure in a seismic energy generator for offshore subsurface exploration, for example, comprising a hollow, elongated valve having equal and opposite surfaces and means for charging the generator through the valve with high pressure gas and simultaneously applying equal forces in opposite directions to the valve whereby a minimum of force is required to open the valve.

3,800,833

UNDERGROUND PIPING MODIFICATION APPARATUS

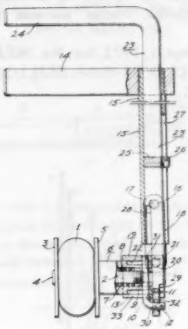
Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sept. 29, 1972, Ser. No. 293,706

Int. Cl. F16l *55/12*

U.S. Cl. 138—89 **4 Claims**

Apparatus operable from the surface for blocking off (i.e., plugging) one of the two pipes of a manifolded underground piping arrangement. A spring-loaded expansible pipe plug is triggered to its sealing position by removing a pin from the plug. By using one tool, such a plug may be inserted from the surface into an underground vertically extending pipe, following which the pin may be removed to trigger the plug to its sealing position; by using a different tool, such a plug may be inserted from the surface into an underground side (horizontally extending) pipe, following which the pin may be removed to trigger the plug to its sealing position.



3,800,834

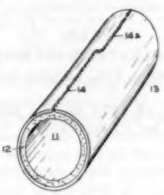
JACKET FOR CYLINDRICAL ARTICLES

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 845,404, July 28, 1969, Pat. No. 3,660,890. This application Mar. 6, 1972, Ser. No. 232,308

Int. Cl. F16l *53/00*

U.S. Cl. 138—151 **1 Claim**



A duct of thermal insulation is jacketed with a gas impermeable sheet material with a longitudinal seam formed by turning the mating ends of the sheet material outwardly and thermally fusing those ends into a linear nodular bead. In the case of metal foils of a few thousandths of an inch in thickness the bead is of the order of a thirty-second of an inch and is turned into the foil jacket to present a smooth non-cutting surface.

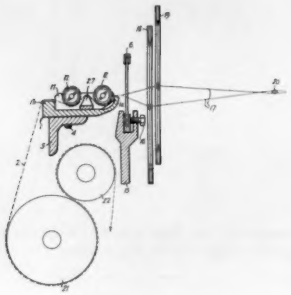
Semi-butt welds of foil are made by clamping the foil in face to face relationship along an essentially line contact and moving an arc welding electrode with associated gas jets for a non-oxidizing gas parallel to and in close spaced relation to the clamp line. Jacketing for preformed ducts of glass or other fiber type insulation is drawn from a supply of sheet stock to form a caternary loop in which a preformed duct is placed. Jaws forming unitary clamps and welding electrodes are closed to close the opposite sides of the loop of foil around the duct and upon each other. The foil is severed closely adjacent the clamps and the electrode with its jets for the gas is moved along the exposed edges of foil adjacent the electrode clamps while drawing an arc to fuse the opposed foil surfaces together. The clamps are then released, the jacketed duct removed from the welding apparatus and the radially extending, fused foil bead pressed parallel to the outer face of the duct.

3,800,835

APPARATUS FOR STRETCHING A FABRIC

Miloslav Riha, Vsetin; Karel Vystrcil, Brno; Jiri Cernocky, and Milan Zgarda, both of Vsetin, all of Czechoslovakia, assignors to Zbrojovka Vsetin narodni podnik, Vsetin, Czechoslovakia

Filed Sept. 1, 1972, Ser. No. 285,816
Int. Cl. D03d *49/00*; D03j *1/22*
U.S. Cl. 139—291 R 2 Claims



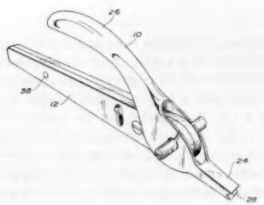
Apparatus for stretching fabric manufactured on weaving looms which permits a quick switching from using border temples to using whole width temples. A channel-shaped supporting ledge for temple holders is provided on the loom, the upwards pointing side walls of the ledge forming sliding guidings and a support for the stretched fabric, the recessed part of the supporting ledge accommodating the temple holders.

3,800,836

HAND OPERATED WIRE BINDER

Joseph J. Flick, Channing, Tex., assignor to Oliver W. Bivins, Amarillo, Tex.

Filed Nov. 22, 1972, Ser. No. 308,828
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 1 Claim



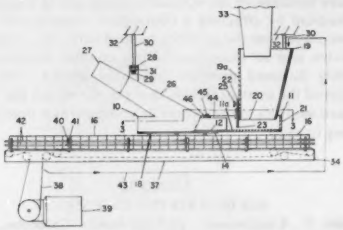
Wire binding is placed around hoses or packages or any other item requiring a binder by first forming a wire into a hairpin shape. The doubled wire is placed around the object and the ends are brought through the bight. The bight is engaged with the nose of a hand tool and the ends attached to a windlass which extends from the hand tool. Rotation of the windlass by operation of plier-like handles causes the wire to be wound upon the windlass, tightening the wire around the object. The tool is then rotated about the bight of the wire which brings the ends of the wire bent over from around the bight. The ends of the wire are snipped off, thus completing the binding.

3,800,837

MACHINE FOR CONTINUOUSLY FILLING CONTAINERS

Edwin F. Pleus, Sun Prairie, Wis., and Dennis O. Mietzel, Columbus, Wis.

Filed Mar. 10, 1972, Ser. No. 233,492
Int. Cl. B65b *1/08*
U.S. Cl. 141—131 13 Claims



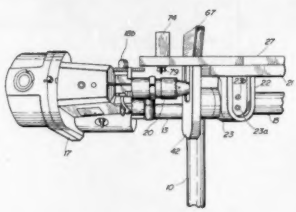
A machine for continuously filling containers with particulate material having a vibratory feeder pan with a longitudinally elongated slot. A longitudinal container conveyor extends beneath the slot for its entire length. Vibration of the pan causes particulate material to move longitudinally along the pan toward the edges of the slot where the material drops into the moving containers on the conveyor.

3,800,838

ASSEMBLY FOR CONVERTING A DRILL PRESS TO A CIRCULAR SAW

Glenn B. Morse, 321 Fountain N.E., Grand Rapids, Mich.

Filed Aug. 28, 1972, Ser. No. 284,424
Int. Cl. B27c *1/14*
U.S. Cl. 144—1 C 4 Claims



Attachments are provided to convert a pivotal-column drill press to a circular saw by mounting a work table on the support table of the drill press, installing a saw and arbor in the drill press chuck, and mounting saw guards on an overhanging portion of the work table opposite a slot receiving the saw blade.

3,800,839

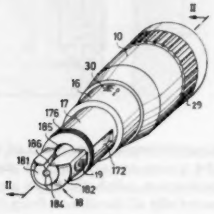
POWER TOOL FOR THE APPLICATION OF SCREWS OR THE LIKE

Norman Bogle, Melanchthonstr. 22, Reutlingen-Betzingen, and Hans Machtolf, Schillerstr. 12, Altenburg, both of Germany

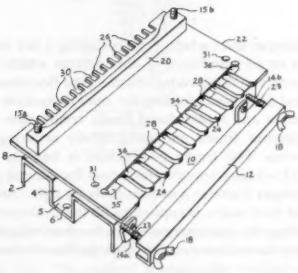
Filed Feb. 29, 1972, Ser. No. 230,272
Claims priority, application Germany, Mar. 2, 1971, 2109729
Int. Cl. B25b *23/08*
U.S. Cl. 144—32 15 Claims

An attachment for portable power drills which serves to apply screws or similar threaded fasteners has a housing adapted to be clamped to the body of a drill and a drive shaft which can be rotated by the drill through the intermediary of an overload clutch. A control sleeve is movable axially and is

turnable relative to the housing and supports at its front end a funnel for reception of screws in such a way that the head of a screw is insertable through a lateral inlet opening, that the stem or shank of the screw is insertable through a forwardly tapering slot, and that the tip of the screw can extend through a central outlet opening of the funnel. The latter has two sections which are biased towards each other by leaf springs anchored in the control sleeve. The rear end face of the control sleeve has sockets of varying depth which can be moved into registry with stops provided on an axially adjustable guide sleeve which surrounds the control sleeve. A removable bit in the drive shaft can rotate a screw in the funnel while the control sleeve moves rearwardly to the extent determined by the stops. The control sleeve is movable to an angular position in which it can be retracted to such an extent that the bit is accessible for inversion or replacement.

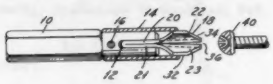


3,800,840
DOVETAIL FIXTURE
Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed July 26, 1972, Ser. No. 275,303
Int. Cl. B27f 1/14, 1/10
U.S. Cl. 144—87 **10 Claims**



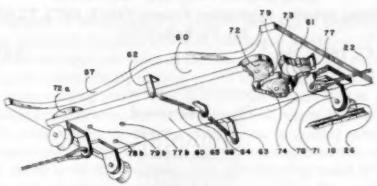
This invention is concerned with dovetail fixtures for clamping and holding orthogonally disposed workpieces and for guiding a cutting tool. A slotted guide member in the form of a comb or template is held against one of the workpieces to guide a router or similar cutting tool as the bit traces the dovetail pattern. A different cutter guiding template is employed herein. In addition novel workpiece locating members are movably attached to both the horizontal and the vertical work-receiving surfaces for spacing workpieces relative to each other during cutting.

3,800,841
SCREW-HOLDING SCREWDRIVER WITH REPLACEABLE NIB
Fritz L. Lindberg, 2726 Mt. Elliot Ave., Flint, Mich.
Filed Apr. 18, 1973, Ser. No. 352,230
Int. Cl. B25b 15/00
U.S. Cl. 145—50 E **6 Claims**



A screwdriver with a replaceable nib for use in production procedures to permit replacement of the nib as a wear part. The split nib has a distal end separation which in the combination allows resilient movement of the nibs to grasp the head of a screw prior to insertion.

3,800,842
MATERIAL FEEDING PLATFORM
Friedrich Peter Schell, 4313 San Bernardino Ave., Las Vegas, Nev.
Continuation of Ser. No. 198,727, Nov. 15, 1971, abandoned.
This application May 8, 1973, Ser. No. 358,448
Int. Cl. B27c 5/02
U.S. Cl. 144—323 **12 Claims**



An improved device for feeding materials to a working tool comprises a platform having linear and transverse guide means and biasing means for urging the platform toward a working tool. These means are attached to the platform underside whereby the upper side of the platform is unencumbered and on which upper side materials to be worked or shaped are attached or secured. In one embodiment transverse motion of the platform is provided by guide means extending perpendicular to the normal axis of the linear guide means; in a second embodiment eccentric or oscillating motion is provided by a plurality of discs incorporating offset spindles.

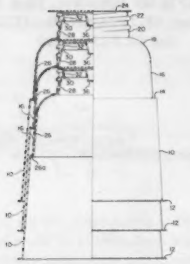
ERRATUM

For Class 145—50 E see:
Patent No. 3,800,841

3,800,843
DISPOSABLE NURSER
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 13, 1972, Ser. No. 234,110
Int. Cl. A45c 7/00
U.S. Cl. 150—0.5 **1 Claim**

A disposable nursing container assembly having an outer support housing of modified generally frusto-conical shape with an intermediate outward peripheral ledge to which the open end of a cup-like bag is secured and initially inverted and housed within the reduced upper portion of the housing permitting nesting of multiple container assemblies one within another as a multi-unit package from which a container unit

may be removed and the cup-like bag reversed to depend from the ledge within the lower portion of the housing and provide with the upper portion of the housing a receptacle for fluid which may be dispensed through a nipple to be attached to the upper open end of the housing.

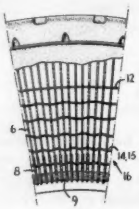


3,800,844

RADIAL TIRE WITH ADDITIONAL SIDEWALL REINFORCEMENT

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France

Filed Jan. 23, 1973, Ser. No. 326,115
Claims priority, application France, Feb. 3, 1972, 72.03718
Int. Cl. B60c *9/04*
U.S. Cl. 152—356 **5 Claims**



A radial tire is formed with the usual radial carcass and, in each sidewall, an additional reinforcement ply comprising cords arranged circumferentially of the tire and having a stiffness which generally increases with increasing distance from the axis of the tire from a minimum value at the edge adjacent to the bead wire to a maximum value at the other edge. In manufacturing the tire on a building drum, the cords selected to form the additional ply comprise a fragile core portion and a portion wound in a helix around the core and capable of elongation by rupture of the core and increase of the pitch of the helix. During the subsequent shaping, the cords of the additional ply automatically acquire the proper stiffness. This produces a tire providing improved road qualities and passenger comfort.

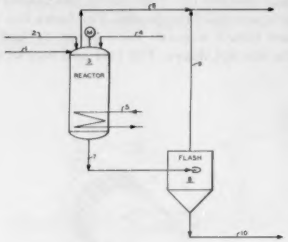
3,800,845

SOLVENT REMOVAL FROM POLY(ARYLENE SULFIDE) REACTION SLURRY

Jack S. Scoggin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 14, 1971, Ser. No. 207,798
Int. Cl. B01d *3/06*; **C08g** *23/00*
U.S. Cl. 159—47 **5 Claims**

A method is provided for the removal of polar organic diluent from a reaction slurry of poly(arylene sulfide) solid polymer particles, organic polar diluent, by-product alkali metal halide, and other impurities by the isothermal evaporation of the reaction slurry reducing the pressure on the slurry from reaction pressure sufficiently to evaporate essentially all of the water and approximately one third of the diluent and then removing the concentrated reaction slurry to another vessel flashing the mixture adiabatically to atmospheric pressure to remove essentially all the diluent from the polymer.

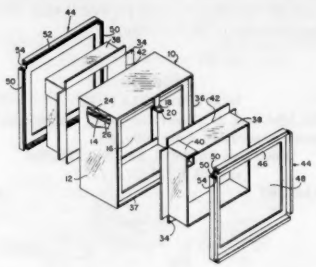


3,800,846

FIRE DAMPER DUCT ADAPTOR

John C. Kurz, Red Lion & Gantry Rds., Philadelphia, Pa.

Filed Feb. 14, 1972, Ser. No. 225,791
Int. Cl. E04f *10/08*
U.S. Cl. 160—35 **5 Claims**



A fire damper duct adaptor for installing a fire damper in a ventilation or air conditioning duct system which includes a duct connector of dimensions less than the fire damper frame, a peripheral filler piece joining the duct connector to the fire damper frame and a peripheral frame connection overfitting the fire damper frame and peripherally securing the filler piece thereto. The frame connection is bent to provide a peripheral U-shaped trough which overfits the end portions of the fire damper frame in a substantially air tight connection. A semi-liquid duct sealer is applied to fill the U-shaped trough to aid in sealing the junction between the duct adaptor and the fire damper frame to prevent air leakage therethrough.

3,800,847

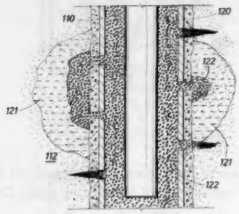
SAND CONSOLIDATION BY ADHESIVE AGENT AND PARTICULATE PACK

James L. Rike, 2237 Jefferson Ave., New Orleans, La.

Continuation of Ser. No. 164,751, July 21, 1971, abandoned. This application July 20, 1973, Ser. No. 381,357
Int. Cl. E21b *33/138*, *43/04*, *43/08*
U.S. Cl. 166—295 **23 Claims**

The flow of sand into a well is controlled by injecting into the producing zone a sand consolidation adhesive agent which will cause consolidation of the sand particles by sticking one to another, and forcing a particulate material into the producing zone after the injection of the sand consolidation adhesive

agent, and producing through the consolidated sand and particulate material. A screen may be placed in the particulate material or above the particulate material to aid in mechanically supporting the particulate material and holding the particulate pack in place. The method for controlling the flow of sand into a well is especially suitable for a cased well which has been perforated and provides an essentially fail safe consolidation method.



3,800,848

METHOD FOR CONTINUOUS VACUUM CASTING OF METALS OR OTHER MATERIALS

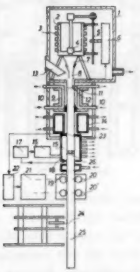
Roger Louis Chaulet, Grenoble; Claude Pierre Albert Louis Guichard, Voiron; Pierre Lucien Menissier, Grenoble, and Jean-Claude Georges Soret, St. Egreve, all of France, assignors to Societe Anonyme: Societe Industrielle de Combustible Nucleaire, Annecy (Haute Savoie), France

Division of Ser. No. 865,719, Oct. 13, 1969, Pat. No. 3,724,529. This application Oct. 25, 1972, Ser. No. 300,816

Claims priority, application France, Oct. 18, 1968, 68.170599; Sept. 15, 1969, 69.6931355

Int. Cl. B22c *19/04*

U.S. Cl. 164—64 **7 Claims**



A method for continuous vacuum casting of metals or other materials, more particularly for the obtention of shapes such as tubes and bars. The method is applicable to plants comprising a spray means in the open air and a dynamic lock for emergence of a cast shape into air. The lock comprises chambers maintained under decreasing pressures by pumping devices and are separated from each other by diaphragms. The static pressure of the metal on the shape being formed is held at a constant value, for a given size of shape with respect to the liquid meniscus size, so as to render the difference between the cross-section of said shape when reaching the dynamic lock, and the cross-section of the diaphragms low enough for the rate of air admission to remain lower than the pumping rates of the pumping devices. The cast shape is cooled throughout a zone of such length, as a function of a set rate of withdrawal of the shape, that the shape will enter the spray means, when leaving the lock, at a constant temperature.

3,800,849

METHOD OF INTRODUCING THE DUMMY BAR INTO A CONTINUOUS CASTING MOLD AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

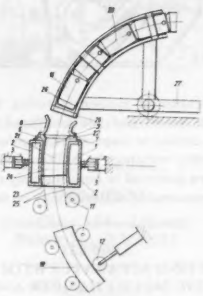
Bernhard Knell, Thalwil, and Werner Bruderer, Feldmeilen, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Feb. 22, 1972, Ser. No. 227,964

Claims priority, application Switzerland, Feb. 25, 1971, 2882/71

Int. Cl. B22d *11/08*

U.S. Cl. 164—82 **14 Claims**



A method of introducing a dummy bar into a continuous casting mold which comprises withdrawing at least one of two mold walls on opposite sides of the continuous casting mold in a direction substantially normal to the longitudinal axis of the continuous casting mold. The dummy bar is introduced into the opened continuous casting mold and is subjected to the action of guide means so that the dummy bar is guided through the continuous casting mold at a given distance from the walls of the mold until the stopping and withdrawing head of the dummy bar assumes a prescribed position within the continuous casting mold. Then the guide means is removed from the continuous casting mold, and the previously displaced mold wall is returned into its casting position.

3,800,850

ELECTRON BEAM MELTING INSTALLATION

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Alexeevich Movchan, ulitsa Darvina, 7, kv. 7, both of Kiev; Alexandr Mikhailovich Belenky, ulitsa Gagarina, 63, kv. 80; Alexandr Mikhailovich Teschev, ulitsa Lyadova, 9, kv. 129, both of Kazan; Alexel Lavrentievich Tikhonovsky, ulitsa Vernadskogo, 73, kv. 45, Kiev; Jury Anatolievich Kurapov, ulitsa Kapitanovskaya, 28, kv. 36, Kiev; Rostislav Spiridonovich Misjura, ulitsa Chudnovskogo, 2, kv. 22, Kiev, and Pavel Petrovich Kucherenko, ulitsa Gorkogo, 14, kv. 29, Kiev, all of U.S.S.R.

Filed July 14, 1971, Ser. No. 162,520

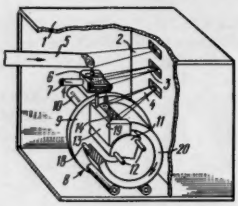
Claims priority, application U.S.S.R., July 17, 1970, 1458058

Int. Cl. B22d *27/02*

U.S. Cl. 164—250 **2 Claims**

An electron beam melting installation for manufacture of rings and pipes from a consumable material employs a vacuum chamber having electron beams for melting, into which chamber the consumable material is fed, preferably in the form of a bar. Molten material from the bar is deposited into a water-cooled intermediate vessel wherein the material is maintained in molten state by an electron beam. The molten material is gradually discharged into a metal crystallization unit, also disposed in the vacuum chamber. The crystallization unit employs an L-shaped member arranged to be capable of controlled vertical movement on the circumference of a sector-shaped element. The sector-shaped element is secured to a

rotatable seeding or forming disk which is slowly rotated by means of a hollow shaft. Molten material deposited into a recess formed by the L-shaped member crystallizes, slowly adding to the pipe or ring which is being formed. The region of said recess is heated by further electron beam means to control the crystallization of molten material. The hollow shaft, the intermediate vessel and the L-shaped member are expediently water-cooled to improve the performance of the installation. By slowly rotating the hollow shaft and the seeding disk when molten material is continuously crystallized, pipes or rings of the consumable material may be formed.



3,800,851

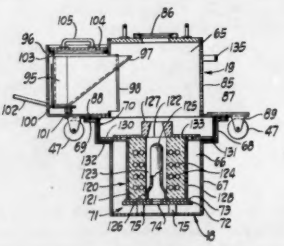
METAL CASTING APPARATUS WITH MEANS FOR EVACUATING MOLD CHAMBER AND POURING CHAMBER

Timothy L. Coghill, Mentor, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Filed May 28, 1971, Ser. No. 147,828

Int. Cl. B22d *27/14, 27/15*

U.S. Cl. 164—255 **15 Claims**



Apparatus is provided for casting molten metal into a mold under a vacuum. The apparatus includes a pair of housings which are movable together to form a sealed enclosure having an upper portion defining a pouring chamber and a lower portion defining a mold chamber adapted to be sealed from the pouring chamber around the mold. Both chambers may be evacuated during the casting operation.

3,800,852

COOLING DEVICE FOR A CONTINUOUS CASTING MACHINE

Ilario Properzi, Via Vittor pisani-8, Milan, Italy

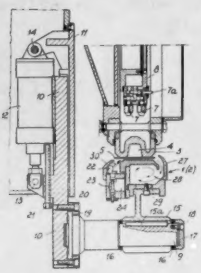
Filed Mar. 29, 1971, Ser. No. 128,792

Claims priority, application Italy, Apr. 9, 1970, 23100/70

Int. Cl. B22d *11/06*

U.S. Cl. 164—278 **7 Claims**

A cooling device for a continuous casting machine comprising a number of nozzles placed in a row one after another in a given arc of a circle near a border of a belt partially wound around a casting drum. The nozzles impinging a substantially continuous cooling liquid blade onto the belt in a direction transverse to the belt through a gap extending along a length of the belt and formed between said belt and an arcuated body placed near said belt. Deflection means are also provided to return drainage to a collector. The formed liquid blade or lamina licking the belt improves remarkably the cooling efficiency and the operation conditions.



3,800,853

SUBMERGED NOZZLE FOR CONTINUOUS CASTING

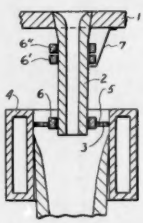
Friedhelm Neumann, Adliswil, and Josef K. Zeller, Weesen, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Sept. 16, 1970, Ser. No. 72,692

Claims priority, application Switzerland, Sept. 16, 1969, 13937/69

Int. Cl. B22d *11/10*

U.S. Cl. 164—281 **5 Claims**



A nozzle for the continuous casting of steel which has at least one outlet below the slag-covered surface of the molten metal in the mold, is protected against corrosive effects of the slag at the surface of the molten metal and also against erosion in the outlet region of the nozzle by refractory rings.

3,800,854

QUICK RELEASE MECHANISM FOR CONTINUOUS CASTING COOLANT COUPLING PIPES

Charles H. Bode, Jr., Upper St. Clair Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

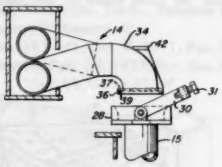
Filed Jan. 10, 1972, Ser. No. 216,503

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 **2 Claims**

Quick release mechanism for releasably attaching cooling water pipes on an oscillating continuous casting mold frame to water supply lines. A clamping yoke is pivotally attached to one pipe and carries a set screw which bears against a bearing

lug attached to the second pipe to tighten the coupling. An internally tapered flange attached to one pipe provides guide



means for the second pipe. The coupling is made leakproof by the use of an O-ring compressed by the clamp.

3,800,855

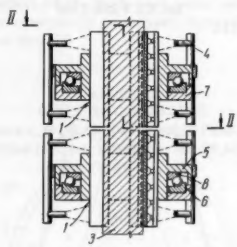
DEVICE FOR SECONDARY COOLING OF ROUND SHAPED INGOTS DURING CASTING OF METAL

Vladimir Alexeevich Bashkov, ulitsa Bardina, 3; Oleg Viktorovich Martynov, ulitsa Pervomaiskaya, 2, kv. 31; Sergei Sergeevich Tickhonov, ulitsa Metallurgov, 1a, kv. 6; Vladimir Nikolaevich Ordinartsev, ulitsa Stoletova, 5, kv. 1; Jury Nikolaevich Ordinartsev, ulitsa Bunkernaya, 20; Mikhail Nikolaevich Markarov, ulitsa Metallurgov, 35/7, kv. 7; Vladimir Alexeevich Belousov, ulitsa Metallurgov, 6, kv. 96; Anatoly Georgievich Sitnov, ulitsa Metallurgov, 80a, kv. 42, and Semen Maximovich Gorlov, ulitsa Kutuzova, 106a, kv. 28, all of Tula, U.S.S.R.

Filed Feb. 16, 1972, Ser. No. 226,796

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 **1 Claim**



A device is disclosed which includes two similar sections of water-cooled tie bars intended for holding an ingot being withdrawn from a mould and sprays for supplying ingot cooling medium located between the tie bars. With the device in operation the sections turn in opposite directions through an angle corresponding to a spacing between the tie bars which permits the supplying of the cooling medium onto the entire side surface of the ingot ensuring thereby uniform cooling of the ingot.

3,800,856

APPARATUS FOR COOLING OF VACUUM-CAST INGOTS

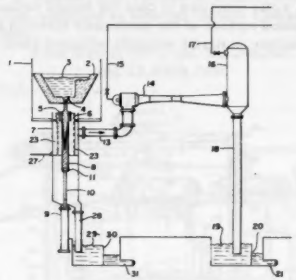
Eugene A. Mizikar, Clairton, and Frederick H. Rehmus, Baldwin Borough, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 156,554, June 24, 1971, Pat. No. 3,759,312, which is a continuation of Ser. No. 869,816, Oct. 27, 1969, abandoned. This application May 29, 1973, Ser. No. 364,456

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 **4 Claims**

An ingot of metal continuously cast under vacuum is withdrawn into a cooling ch ›ber maintained at a pressure intermediate casting pressure and atmospheric pressure and cooled therein by sprays of cooling liquid. The seal between



the chambers is that effected between the molten metal in the ingot mold and the mold.

ERRATUM

For Class 164—252 see:
Patent No. 3,801,153

3,800,857

PROCESS AND APPARATUS FOR THE STORAGE OF NUCLEAR-IRRADIATED FUEL ELEMENTS

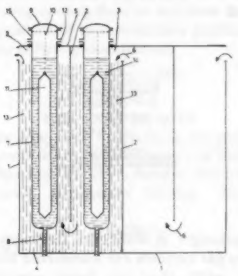
Roger Verbeke, Mouscron, and Paul Heylen, Mol, both of Belgium, assignors to Belgonucleaire and Centre D'Etude De L'Energie Nucleaire, both of Brussels, Belgium

Filed June 17, 1971, Ser. No. 154,056

Claims priority, application Netherlands, June 22, 1970, 7009149

Int. Cl. F28d *15/00*

U.S. Cl. 165—1 **4 Claims**



Fuel elements irradiated in a sodium-cooled nuclear reactor are stored by immersion in individual vessels containing a sodium-containing heat transfer fluid, which vessels are collectively placed in a larger vessel through which an organic heat transfer fluid is circulated.

3,800,858

RAILWAY CAR THAWING SYSTEM

Eugene W. Placek, Parma, Ohio, assignor to VanDorn Company, Cleveland, Ohio

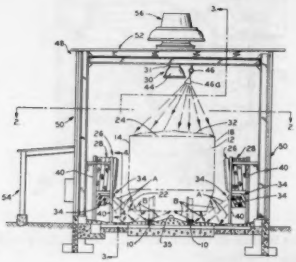
Filed Jan. 20, 1972, Ser. No. 219,307

Int. Cl. F28c *3/00*

U.S. Cl. 165—1 **32 Claims**

Apparatus and methods are disclosed for thawing frozen particulate material such as coal disposed in a railway car. Thawing is achieved by heating the sidewalls and bottom of

the car and the exposed upper surface of the particulate material by means of a heat source such as infra-red generators and flowing water downwardly through the particulate matter. The water functions to cool the heated surfaces of the car, the exposed surface of the particulate material and areas of the particulate material inwardly adjacent these surfaces



and to transfer heat from these areas to inner regions of the mass of particulate material in the car to enhance thawing of the material. The bottom of the car is heated by directing heat downwardly and inwardly beneath the car and reflecting or reradiating the heat upwardly towards the bottom of the car by means of suitable reflective material, or a bed of heat radiating particulate material.

3,800,859

TRANSFERRER OF THE THERMODYNAMIC CHARACTERISTICS OF TWO GASES

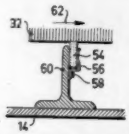
Per Gunnar Norback, Lidingo, Sweden, assignor to Carl Georg Munters, Stocksund, Sweden

Division of Ser. No. 745,431, July 17, 1968, Pat. No. 3,587,723. This application Feb. 19, 1971, Ser. No. 116,925

Claims priority, application Sweden, July 20, 1967, 10725/67

Int. Cl. F28d *19/00*

U.S. Cl. 165—9 **1 Claim**



A rotary exchanger in which the thermodynamic characteristics of two gas currents are transferred from one current to the other while they are being passed through the exchanger body in zones separated from one another while it is being rotated within a casing, adjustable sealing means being provided between the exchanger body and the casing to define the separate zones from one another.

3,800,860

REGENERATOR BODIES FOR ROTARY REGENERATIVE HEAT EXCHANGERS

Bo Johnsson, Kungsbacka, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

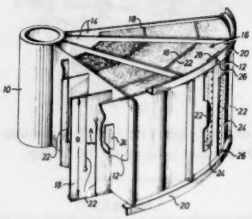
Filed Oct. 29, 1971, Ser. No. 193,647

Claims priority, application Great Britain, Nov. 2, 1970, 51927/70

Int. Cl. F28d *19/00*

U.S. Cl. 165—9 **5 Claims**

A regenerator body for a rotary regenerative heat exchanger of the type which comprises a cylindrical outer shell and a central core, and radial partitions subdividing the annular space between the shell and the core into sectorial compartments which are in turn subdivided into sections by tangential walls. At least some of the tangential walls are



yieldable in the peripheral direction of the body, by means of pairs of overlapping peripherally space slits in the walls, in order to reduce the thermal stresses arising within the body during operation of the heat exchanger.

3,800,861

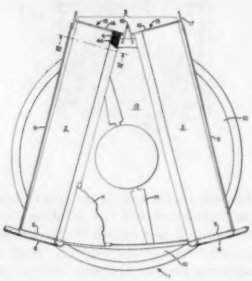
AIR COOLED VAPOR CONDENSER MODULE

David P. Flitner; Paul G. La Haye, both of Cape Elizabeth, Maine, and Franz J. Neugebauer, Green Valley, Ariz., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,445

Int. Cl. F28b *1/06*

U.S. Cl. 165—111 **12 Claims**



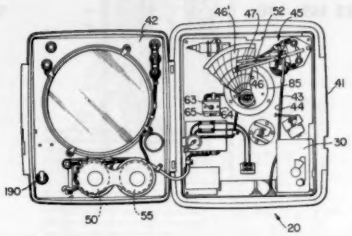
A module air cooled condenser with two generally vertical rows of horizontally extending heat exchanger tubes has an inlet tube sheet comprised of a structural member or a pair of structural members and a pair of outlet tube sheets to which are attached condensate headers. The module is appropriately enclosed on the top and frontal areas by sheet metal to provide an air plenum for the air flow which passes across the tube bundles from the fan mounted below the air plenum chamber. In another embodiment an additional row of tubes is provided whereby a reverse flow of vapor is maintained in order to decrease the occurrence of freeze up. In a further embodiment directed to freeze protection, all of the heat exchanger tubes slope downwardly toward the inlet tube sheet thereby having the condensate in contact with vapor at all times.

3,800,862

TIME SCHEDULE CONTROLLER AND PARTS AND SYSTEM THEREFOR

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 187,641, Oct. 8, 1971, Pat. No. 3,730,427.
This application Feb. 20, 1973, Ser. No. 333,668
Int. Cl. G05b 19/04
U.S. Cl. 165—12 10 Claims



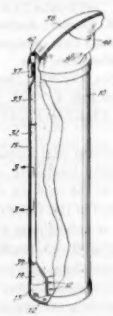
A time schedule controller wherein the high limit index and the set point index respectively have members movable therewith and alignable in relation to each other only when the set point index reaches the setting of the high limit index. An actuator for terminating the operation of the set point index in the rate of rise thereof is only actuated when the alignable members of the high limit index and the set point index that are operatively associated therewith are in their aligned relation thereof.

3,800,863

GOLF BAG WARMER

Martin F. Bauman, Jr., P.O. Box 1706, El Paso, Tex.

Filed Oct. 14, 1970, Ser. No. 80,600
Int. Cl. F24h 3/00
U.S. Cl. 165—47 1 Claim



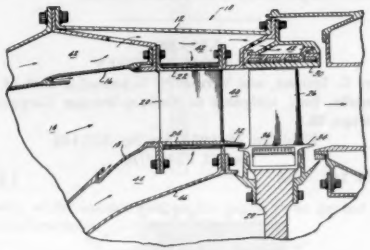
A golf bag warmer comprising a heater at the base of a golf bag and a heat exchanger extending up within the bag. The heat exchanger may optionally act as an exhaust vent for harmlessly passing fumes from the heater to the atmosphere, and as a handle for inserting and removing the warmer from the bag.

3,800,864

PIN-FIN COOLING SYSTEM

Ambrose A. Hauser, and Thomas A. Zuxier, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,047
Int. Cl. F24h 3/00
U.S. Cl. 165—47 10 Claims



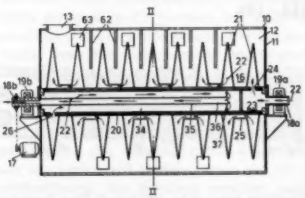
A fluid cooled element for partially defining a hot gas flow path within a gas turbine engine is provided with a cooling system incorporating a plurality of pin-fins or similar protuberances disposed upon a face of the wall bounding the hot gas passage. The face and an associated liner combine to define a cooling fluid plenum adjacent the wall, with the protuberances extending into the plenum. The liner bounds a cooling fluid passage, and an aperture is provided for introducing cooling fluid from the passage into the plenum. Another aperture is provided for exhausting cooling fluid from the plenum - into the hot gas passage, for example. The plenum can be divided into a plurality of independently cooled compartments by means of ribs extending substantially between the aforementioned cooled face of the wall and the liner. The protuberances can be arranged in greater densities per unit area in areas where heat concentrations exist in order to reduce temperature gradients. Furthermore, the apertures for introducing and exhausting cooling fluid to and from the plenum may be sized and positioned to concentrate greater quantities of fluid upon areas of heat concentrations.

3,800,865

HEAT EXCHANGES

Thor Onarheim, Hop, and Per Solberg, Bergen, both of Norway, assignors to Stord Bartz Industri A/S, Bergen, Norway

Filed May 11, 1971, Ser. No. 142,314
Claims priority, application Norway, May 16, 1970, 1884/70
Int. Cl. F28f 5/04
U.S. Cl. 165—92 8 Claims



This invention has reference to heat exchangers for the indirect heating, drying or cooling of more or less moist, solid or semi-solid materials and which comprise a stationary heat exchanger jacket within which a heat exchanger body is mounted for rotatable movement, said body comprising a hollow cylinder provided with a row of outwardly projecting annular disc-like hollow bodies for receiving a suitable heat

exchanger carrier medium and vane means on the hollow bodies for conveying the material to be treated through the chamber and for turning and stirring about this material.

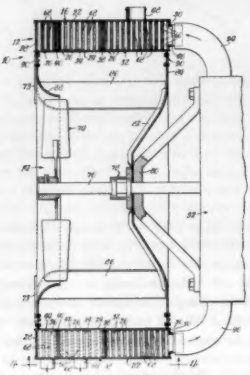
An essential feature of the invention involves interconnecting the hollow bodies at the periphery of the hollow cylinder to form a row in series, or two separate rows in series, connected in series with a through-passage of the hollow cylinder and having a flow path extending peripherally forwards and backwards between a medium intake and a medium discharge located at the periphery of the hollow cylinder.

3,800,866

RADIATOR ASSEMBLY

Robert G. Ireland, and Vernon N. Tramontini, both of Indianapolis, Ind., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 327,140
Int. Cl. F24h *3/10*
U.S. Cl. 165—122 **1 Claim**



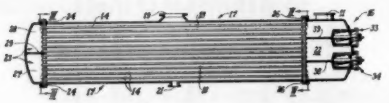
A static annular radiator having fluid passageway means and radial air passageway means. Fluid inlet and outlet means are provided for the fluid passageway means. Air propelling means are located coaxially of the annular radiator for effecting air flow radially through the air passageway means.

3,800,867

THROUGH FLOW FLUID TREATMENT APPARATUS

Peter J. MacKenzie, Mount Waverley, Victoria, Australia, assignor to Woodall Duckham Limited, Melbourne, Australia

Filed June 7, 1971, Ser. No. 150,559
Claims priority, application Australia, June 5, 1970, 1430/70
Int. Cl. F28f *13/06*
U.S. Cl. 165—158 **13 Claims**



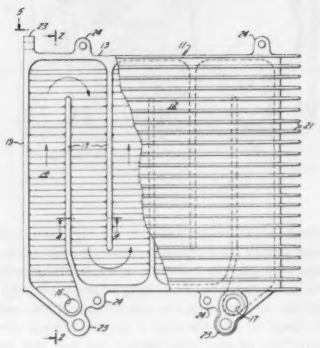
This invention relates to a through flow heat exchanger or other fluid treatment apparatus. The treatment apparatus has a battery of treatment tubes in a treatment compartment. The treatment apparatus also has an inlet and an outlet and flow control means so that fluid can normally flow through the tubes in one flow pattern. The flow control means can be changed for temporary operation to produce a different flow pattern. The volumetric flow rate through the apparatus varies but the linear flow rate through the tubes is constant. The apparatus may be incorporated in trains so that one train can be spared for maintenance leaving the other train or trains to process all the fluid.

3,800,868

HEAT EXCHANGER

Murray Berkowitz, Woodcliff Lake, and Robert C. Davis, Ramsey, both of N.J., assignors to Curtis-Wright Corporation, Wood-Ridge, N.J.

Filed Apr. 14, 1972, Ser. No. 243,976
Int. Cl. F28f *3/04*
U.S. Cl. 165—170 **7 Claims**



A liquid-to-gas heat exchanger having an internal ribbonlike flow passage for the liquid, having means in the passage of adding extended surface and of interrupting, separating, or causing turbulence in the boundary layer to increase the liquid side film coefficient of heat transfer. The heat exchanger is of cast construction, and is provided with external fins for the passage of air or other gas thereover.

3,800,869

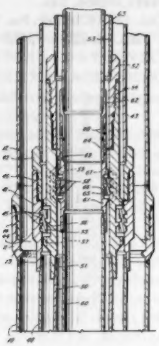
UNDERWATER WELL COMPLETION METHOD AND APPARATUS

David P. Herd; John H. Fowler; Andre H. Drouin, and Robert E. Bush, all of Houston, Tex., assignors to Rockwell International Corporation, Houston, Tex.

Continuation of Ser. No. 792,912, Jan. 22, 1969, abandoned.
This application Jan. 4, 1971, Ser. No. 103,839
Int. Cl. E21b *33/35, 7/12*
U.S. Cl. 166—.5 **50 Claims**

Extended casing method and apparatus for completing an underwater well whereby complete and continuous pressure control is maintained at the surface drilling platform. A conductor casing is installed in the floor of a body of water with a casing head and riser attached near the floor. Other casing is installed and supported at the water floor by hanger heads and having other risers extending upwardly therefrom. Pressure control equipment is installed at the upper end of one of the risers. An innermost casing having a tubing hanger-head attached is lowered through the pressure control equipment and installed. An orientation sleeve is aligned with the tubing hanger-head by properly orient the tubing hanger. The tubing hanger and tubing is then passed through the pressure control equipment and the innermost riser, to which the pressure control equipment is attached and is lowered to engage the orientation sleeve for proper alignment with the innermost hanger-head and remotely latched thereto. All seals are then pressure tested. The tubing is plugged, the riser and control equipment

removed and a Christmas tree adapter connected to the tubing hanger head. A Christmas tree assembly is then attached to

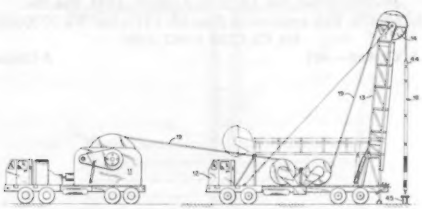


the adapter in fluidtight flow communication with the tubing string.

3,800,870
FORMATION TESTING TOOL

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,075
Int. Cl. E21b *43/00, 49/00*
U.S. Cl. 166—65 R **5 Claims**



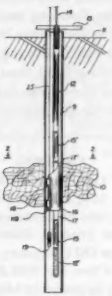
An oil-well-type tool which is adapted for use in deep wells. It cooperates with a reelable armored hose for connection with the surface, and it includes an electric motor driven by a positive displacement pump. There are solenoid valves and piping connections for carrying out surface-controlled test operations at different locations downhole.

3,800,871
TUBING ANCHORS

Billy Ray Watson, Box 756, Monahans, Tex.

Filed May 4, 1972, Ser. No. 250,435
Int. Cl. E21b *47/00, 23/00*
U.S. Cl. 166—250 **5 Claims**

A tubing anchor apparatus used in conjunction with downhole pump systems for securing production tubing to a well casing. The tubing anchor is provided with a longitudinally extending cutout formed between two movable gripping elements which cooperate with the inside peripheral wall surface of the casing to form an unobstructed tunnel therethrough so as to permit a probe to be run downhole through the tunnel thereby enabling the formation underlying the anchor to be logged. Guide means provided on the upper

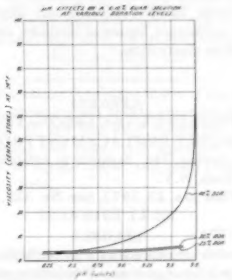


extremity of the anchor enables the probe to be guided into the tunnel entrance.

3,800,872
METHODS AND COMPOSITIONS FOR RECOVERY OF OIL

Robrt H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 152,411, June 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 42,328, June 1, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,019
Int. Cl. E21b *43/22*
U.S. Cl. 166—270 **40 Claims**



Methods are provided for recovery of petroleum oil from a subterranean formation which include injecting into the formation an aqueous flooding medium which assumes a viscosity in oil-rich portions of the formation that is significantly less than the viscosity assumed in the portions low in oil content, the flooding medium thereby preferentially driving the oil, as opposed to water, from the formation. In one embodiment, the flooding medium comprises a pH control agent having a partition coefficient in favor of oil, change in pH occuring when the flooding medium meets oil, the pH change resulting in marked change in viscosity of the flooding medium. In one particular embodiment, the flooding medium includes guar gum and borate ion, which will complex upon the pH change. In another embodiment, the flooding medium includes a material such as guar which imparts a high viscosity but is subject to rapid degradation by the bacteria in the formation, and a poisoning agent for the bacteria, such as ortho-cresol, which is preferentially soluble in oil.

In yet another embodiment the flooding medium comprises an aqueous solution of sodium carboxymethylcellulose in combination with other agents which include, in specific

preferred embodiments, chromium potassium sulfate and ortho-cresol.

Methods of post primary recovery are provided which include injection of a flooding medium of this type into an injection well, whereupon the flooding medium enters oil-rich and water-rich portions of the formation but assumes a viscosity in the water-rich portions which is much greater than that in the oil-rich portions, inhibiting fluid flow through the water-rich portions. Well fluids are then produced from a producing well at favorable oil-to-water production ratios.

3,800,873

SITU RECOVERY OF OIL FROM TAR SANDS USING OIL-EXTERNAL MICELLAR DISPERSIONS

Joe T. Kelly, deceased, late of Littleton, Colo. (by La Verne S. Kelly, executrix), and Fred H. Poettmann, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 888,898, Dec. 29, 1969, Pat. No. 3,648,771. This application May 28, 1971, Ser. No. 148,120The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. E21b *43/24*

U.S. Cl. 166—272 **20 Claims**

Hydrocarbon from sub-surface tar sands having an injection means in fluid communication with a production means is recovered by first heating the tar sands, then injecting an oil-external micellar dispersion into the tar sands and displacing it towards the production means to recover hydrocarbon through the production means. The tar sands are heated to a temperature sufficiently high to cause the incoming micellar dispersion to become heated to a temperature above 100°F by the time it travels about 7.5–15 feet into the tar sands. The micellar dispersion can be preceded by a slug of hot water, above 100°F., and the water can have a pH greater than about 7. Also, the water within the micellar dispersion can have a pH of about 7–14 and, preferably the dispersion is at a temperature up to about 100°F. The micellar dispersion contains hydrocarbon, surfactant, aqueous medium, and optionally co-surfactant and/or electrolyte.

3,800,874

HIGH PRESSURE GAS-CARBONATED WATER MISCIBLE DISPLACEMENT PROCESS

Loyd R. Kern, Irving, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,381

Int. Cl. E21b *43/22*

U.S. Cl. 166—274 **24 Claims**

Reservoir oil is produced by a quasi high pressure gas — miscible solvent flood process. Immiscible carbonated water flow through the reservoir in essentially a single phase at an appropriate concentration and pressure leaves a widespread, fairly uniform distribution of carbonated residual oil which acts as a quasi solvent material. Subsequently, a fluid containing a gaseous phase is injected at a miscible pressure below the pressure at which the gas would have built miscibility with the reservoir oil prior to carbonation but high enough to possibly create by multiple contacts a zone miscible with the carbonated residual oil. The created miscible zone banks up the carbonated residual oil into a quasi miscible solvent flood bank. Preferably, the highest pressure exerted on the carbonated water will be equal to or greater than the miscible pressure of the gas, and the injection pressure of the gas will be at least 200 psi higher than highest injection pressure exerted on the carbonated water. An aqueous phase, part of which may be carbonated water, may be used with the miscible gas for mobility and other controls. In the process, the quasi solvent material is generated in place with the mobility and uniform sweep advantages of carbonated water, and the high pressure type of miscibility is created at a lower than normal pressure and banks up a carbonated oil solvent bank thereby providing some of the advantages of the miscible solvent flood process.

3,800,875

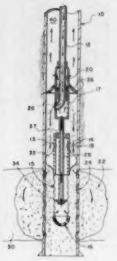
WELLBORE GRAVEL PACK METHOD

William C. Hardy; John C. Shepard, both of Richardson, and Edward F. Schultze, Dallas, all of Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Filed Oct. 18, 1971, Ser. No. 189,856

Int. Cl. E21b *43/02*

U.S. Cl. 166—276 **5 Claims**



Methods of gravel packing are disclosed utilizing controlled melting point materials with the gravel placed behind a liner located in the wellbore. The controlled melting point materials can be coated on the gravel prior to its placement behind the liner or circulated behind the liner separate from the gravel. After placement of the gravel and controlled melting point material behind the liner, heat is provided to melt the material so that it acts as a consolidating agent.

3,800,876

METHOD FOR DISLODGING A PIPE STRING

James F. Eggleston, Denver, Colo., assignor to Tenneco Oil Company, Houston, Tex.

Division of Ser. No. 137,220, April 26, 1971, Pat. No. 3,762,470. This application June 25, 1973, Ser. No. 373,009

Int. Cl. E21b *31/02, 7/00*

U.S. Cl. 166—301 **5 Claims**

Described is a method used in freeing a pipe string stuck in the bore of a well. An inflatable packer and setting tool are run through the string to a position just below the lowermost free connection where the packer is inflated to sealingly close the upper end of the stuck fish. The fish is then separated from the remainder of the string. After the fish is freed from the stuck position the packer and fish are retrieved. The bouyant packer and setting tool are positioned by a weight depending from the packer on a preselected length of wire. The packer comprises a bladder member inflatable with fluid from the setting tool. The setting tool comprises a piston member in a

cylinder, one end of which contains the inflating fluid, the other end of which is provided with gas generating means to force the fluid into the packer.

3,800,877

PROCESS OF FLOODING OIL-BEARING FORMATIONS USING ALDEHYDES AS OXYGEN SCAVENGERS IN POLYMER SOLUTIONS

Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 191,558, Oct. 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 117,692, Feb. 22, 1971, abandoned. This application Aug. 28, 1972, Ser. No. 284,204

Int. Cl. E21b *43/22*

U.S. Cl. 166—305 R **18 Claims**

Flooding of oil-bearing subterranean formations with aqueous solutions of partially hydrolyzed, high molecular weight polyacrylamides or copolymers of acrylamide and acrylic acid wherein the aqueous solution contains at least 0.1 ppm of dissolved oxygen and the oxygen adversely influences the mobility imparted by the polymer, is improved by incorporating 5–1000 ppm of a water-soluble aldehyde (preferably formaldehyde) into the aqueous solution to form a complex with the oxygen and thereby inhibit the adverse effects of the oxygen.

3,800,878

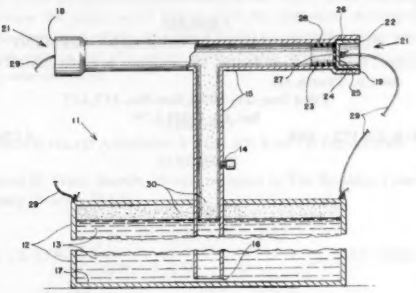
RELEASE MECHANISM FOR PRESSURIZED VESSELS

Edward J. Poitras, 198 Highland St., Holliston, Mass.

Filed Jan. 26, 1972, Ser. No. 220,790

Int. Cl. A62c *37/02*

U.S. Cl. 169—20 **17 Claims**



Disclosed is a fluid pressure release mechanism including a primary seal hermetically sealed in a fluid outlet by a eutectic material, and an auxiliary seal isolating the eutectic material from the fluid pressure and opened thereby upon melting of the eutectic material.

3,800,879

BEAN PULLER

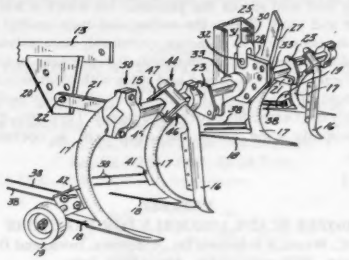
Donald L. Chant, Rt. No. 4, St. Johns, Mich.

Filed July 19, 1972, Ser. No. 273,096

Int. Cl. A01d *15/02*

U.S. Cl. 171—104 **6 Claims**

A bean puller or harvester of the front end mounting type for tractors which includes an hydraulic lift vertically connected eccentrically to a horizontal tool bar and having frame mounted push bars eccentrically positioned in respect to the tool bar and connecting linkage stabilizing movement of the tool bar so that the blades of the harvester engage the earth in a slightly ascendant manner, heel down and limited in depth of penetration by outboard gage wheels. The tool bar is provided with plural cutting blades and selected vine separators as needed leading the blades and the blades are fitted with trailing gathering tines which tend to guide the harvested crop as for windrowing for subsequent threshing.



3,800,880

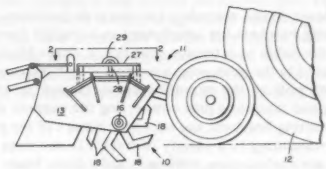
CLEANING ATTACHMENT FOR ROTARY TILLER

Larry N. Schafbuch, Box 79, Ladora, Iowa

Continuation-in-part of Ser. No. 218,768, Jan. 18, 1972, abandoned. This application July 5, 1972, Ser. No. 269,217

Int. Cl. A01b *33/02*

U.S. Cl. 172—39 **15 Claims**



A cleaning attachment for rotary tillers of the type having a protecting hood covering the rotary tiller blades to prevent upward discharge of dirt and mud therefrom. A grid is attached to the hood and plates are mounted for transverse movement so as to scrape earth and mud therefrom as the tiller is used in the field.

3,800,881

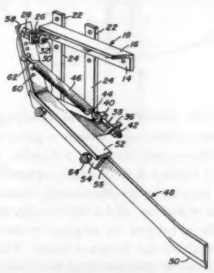
KNIFE COULTER FOR PLOW

Selden G. Washburn, Rural Route, Goodwin, S. Dak.

Filed Nov. 21, 1972, Ser. No. 308,543

Int. Cl. A01b *15/18, 39/22*

U.S. Cl. 172—165 **4 Claims**



An elongated blade-type coulter with a keen knife edge is pivotally mounted on a plow beam in front of and is oriented in alignment with an earth plowing and turning moldboard and

is used in lieu of the commonly employed trash cutting disk-type rolling coulter. Experimental field tested use of this improved knife coulter has repeatedly shown that it functions excellently and well serves the purposes for which it has been adopted and used. Unlike the rolling disk-type coulter it has no hub means which, as is known, commonly accumulates and is fouled with weeds, straw and trash. It is pivotally bracketed on the beam, is spring-biased and rides with clearance above the bottom of the furrow. It yields upwardly and travels free and safely over embedded rocks and stones. Then, too, it functions properly even when the equipment is operated in reverse.

3,800,882

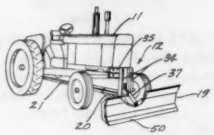
DOZER BLADE ASSEMBLY FOR TRACTORS

Walter C. Werts, 8 Schwartz Dr., Ottumwa, Iowa, and Dwaine E. Werts, 10 Northland Dr., Bloomfield, Iowa

Filed July 17, 1972, Ser. No. 272,533

Int. Cl. A01b *51/00*

U.S. Cl. 172—273 **7 Claims**



A dozer blade assembly for tractors including a pair of mounting brackets for attachment to a tractor frame, a push pole attachable to a tractor drawbar, a dozer blade pivotally connected to the push pole, a support member extending from the push pole to the mounting brackets, and eccentric positioning and mounting pins connecting the support member to the mounting brackets, the eccentric nature of the pins allowing for mounting to a variety of tractor frame sizes. Also disclosed are a telescoping push pole and a dozer blade formed of flat sections of material.

3,800,883

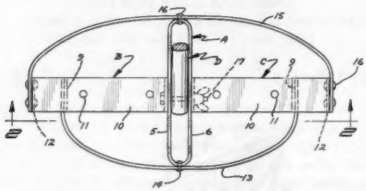
MANUAL MATERIAL SPREADER AND LEVELER

Jacob A. Ronning, 3525 Irving Ave. South, Minneapolis, Minn.

Filed Dec. 26, 1972, Ser. No. 318,500

Int. Cl. A01b *1/00*

U.S. Cl. 172—371 **3 Claims**



An implement for distributing and leveling top dressing material on ground surfaces in which a generally horizontal frame is operated forth and back by a handle, and includes a fore and aft central runner with laterally extending frame bars, which runner and bars support a forwardly bowed blade for initially engaging the material, and a rearwardly bowed but relatively longer blade arranged to engage material discharged around the outer ends of the forward blade. The runner edges project slightly below the bottom edge levels of the two blades to serve as a directional guide for the implement, and the two blades are preferably formed of semiresilient material so as to provide limited horizontal flexibility without permitting any substantial vertical yield to the bottom edges of the blades.

3,800,884

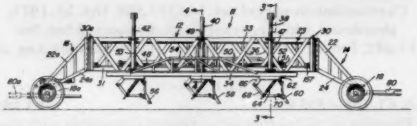
TELESCOPING LANDLEVELER

David A. Estes, De Witt, Ark., assignor to Scott Landlevelers, Inc., De Witt, Ark.

Filed Dec. 28, 1971, Ser. No. 213,071

Int. Cl. E02f *3/12*

U.S. Cl. 172—780 **8 Claims**



An apparatus for leveling or grading the land surface that is constructed in the shape of an elongated rectangular frame including a central frame, a front frame and a rear frame. The front and rear frames are supported at their outer ends by wheels and are adapted to be telescopically inserted into and withdrawn from the central frame. Thus, the leveling apparatus may be shortened or lengthened in accordance with the demands of the work to be performed. A subframe assembly supporting a plurality of leveling blades is disposed beneath the central frame and supported thereon by a vertical lift mechanism. A hydraulic system provided on the leveler raises and lowers the leveling blades, turns the rear wheel, and telescopes the front and rear frames into and out of the central frame.

3,800,885

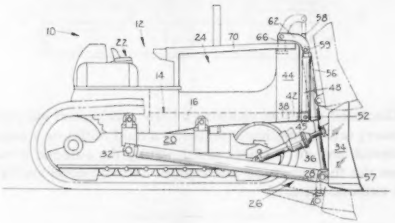
BULLDOZER LIFT CYLINDER ARRANGEMENT

Albert Gianessi, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 21, 1972, Ser. No. 317,417

Int. Cl. G02f *3/76*

U.S. Cl. 172—809 **5 Claims**



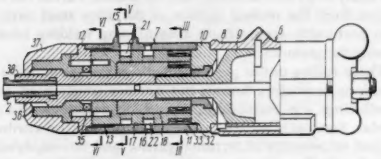
A tractor has a bulldozer assembly pivotally fitted thereto. A cylinder extends upwardly from the bulldozer assembly, and second and third cylinders extend upwardly from a forwardly extending frame portion of the tractor. A yoke interconnects the upper ends of the three cylinders adjacent the nose portion of the tractor. Restraining bell cranks interconnect the nose portion and the yoke. The cylinders are substantially vertically disposed, so that vertical loads on the bulldozer assembly are carried substantially fully by the first cylinder, and transferred through the yoke to the second and third cylinders to the forwardly extending frame portion, with minimal loading being carried by the restraining bell cranks.

3,800,886

PERCUSSIVE DRILLING MACHINE

Anatoly Ignatievich Bazhal, Ulitsa Franko, 30, kv. 42, and Leonid Petzovich Ponomozenro, Ulitsa 50 Let, Komsomola, 19, kv. 27, both of Zheltye Vody Dnepropetrovskoi oblasti, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,240
Int. Cl. B25d 15/02; E21b 1/12
U.S. Cl. 173—93 5 Claims



The machine incorporates an air-operated striking piston whose body contains an air-distribution arrangement and a hammer reciprocating due to the action of compressed air so as to deliver at the end of a work stroke a blow at a drill steel arranged in the front part of the machine.

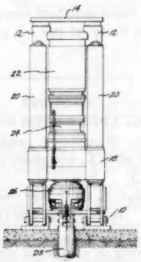
Accommodated in the front part of the machine is a rotary impulse fronthead whose body contains an annular striking piston with projections and a rotary anvil with co-operative indentations and projections so arranged that their side surfaces and walls of the fronthead body form work stroke and idle stroke chambers which connect to a source of compressed air or atmosphere at regular intervals. The projections of the annular striking piston oscillate in these chambers back and forth and through an angle at a high rate due to the action of compressed air so as to deliver at the end of a work stroke a blow at the cooperative projections of the rotary anvil, causing to rotate the rotary anvil linked with the drill steel. Arranged in the front part of the fronthead body is a ratchet mechanism which assures that the rotary anvil and the drill steel rotate in only one direction.

3,800,887

DRIVE HEAD ASSEMBLY FOR AN EARTH DRILLING MACHINE

Harold H. West, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Feb. 7, 1972, Ser. No. 223,838
Int. Cl. E21b 21/00, 3/02
U.S. Cl. 173—57 21 Claims



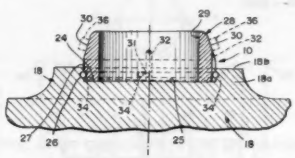
An output shaft projects downwardly through an opening in a support frame. A crown gear at the lower end of such shaft mates with a complementary crown gear at the upper end of a drive head main body situated below the frame. A large bolt extends upwardly through an opening in an upper wall of such drive head main body. It includes a large diameter head which seats against an inner surface of such upper wall and a threaded stem portion which threads into a lower end portion of the shaft. A drive box is located inside of the drive head main body and is coupled thereto by means of splines in a manner permitting it to both float axially and swivel sideways.

3,800,888

CUSHION POT ANVIL WITH MECHANICAL AND MOLDED JOINT

Henry G. Warrington, Palm Beach, Fla., assignor to Vulcan Iron Works Inc., Chattanooga, Tenn.

Filed Jan. 19, 1972, Ser. No. 218,891
Int. Cl. B25d 17/06; E02d 7/14
U.S. Cl. 173—131 4 Claims



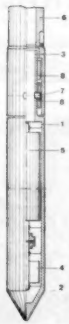
A cushion pot for holding cushioning material on a member such as a pipe cap driven by blows from a reciprocating driving ram of a pile driver comprising a grooved, circular recess formed in the pipe cap member providing a bottom surface of the cushion pot and an upstanding, annular ring having a lower end portion seated in the recess is provided, having an inside surface forming a side wall of the cushion pot. The ring has a tapered, outside surface adapted for centering engagement with the base of the pile driver. Key means is provided for interlocking the ring in the groove of the recess so that if the ring becomes damaged or broken it can be removed and replaced in the field in accordance with the method of the invention.

3,800,889

VIBRATOR DEVICE FOR EARTH BORING OR COMPACTING

Karlheinz Bauer, 8898 Wittelsbacherstr. 5, Schrobenhausen Obb, Germany

Filed June 1, 1972, Ser. No. 258,596
Claims priority, application Germany, July 6, 1971, 2133561
Int. Cl. E21b 11/02
U.S. Cl. 175—19 9 Claims



A vibrator is mounted on a universal joint at the bottom of a hollow shaft which is lowered into the earth for boring or compacting. The vibrator is horizontally vibrated by an electric or pneumatic drive mounted in the vibrator body. For boring service the bottom of the vibrator body comes to a point. To

avoid dissipation of vibratory energy communicated to the shaft by the universal joint, the latter is placed at a vibration node and a narrower extension of the vibrator body bearing counterweights extends upward of the universal joint coupling into the hollow shaft.

3,800,890

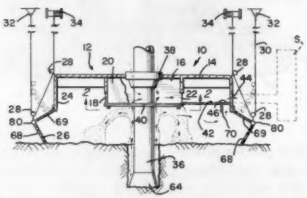
DUST CONTROL SYSTEM

Laszlo Gyongyosi, Clarksburg, and David A. Gregory, Lost Creek, both of W. Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 15, 1973, Ser. No. 332,686

Int. Cl. E21b *7/02*

U.S. Cl. 175—209 **11 Claims**



The system comprises an enclosure for enveloping a portion of drill rod used with an earth drilling machine the enclosure having only one side opening formed therein for coupling to a source of suction. The enclosure has axially aligned holes formed in the top and bottom thereof for admitting drill rod therethrough for address to the earth; and at least one "-floating" type seal disposed about the drill rod for tracking radial excursions of the drill rod during drilling. A baffle plate fixed to the enclosure prevents the travel of large earth cuttings to the source of suction. Further, a flexible hood is carried about the enclosure, and is movably mounted for elevation from the ground area and for lowering thereto to prevent an escape of earth cuttings dust.

3,800,891

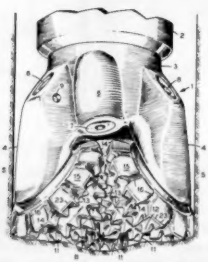
HARDFACING COMPOSITIONS AND GAGE HARDFACING ON ROLLING CUTTER ROCK BITS

Anderson D. White, and Allen E. Wisler, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 515,603, Dec. 22, 1965, abandoned. This application Apr. 18, 1968, Ser. No. 730,671

Int. Cl. E21c *13/00*

U.S. Cl. 175—374 **20 Claims**



The novel hardfacing compositions are sintered tungsten carbide granules in an alloy steel matrix, the granules consisting of grains of monotungsten carbide cemented together with a number of novel binders - iron, nickel, alloys of the three iron group metals and metallic alloys including at least one iron group metal and at least one metal outside such group. Also disclosed are granules comprising a mixture of monotungsten carbide and ditungsten carbide cemented together with a metallic binder, preferably iron.

Such hardfacings are particularly useful when welded to the gage surfaces of rolling cutters of rock bits, particularly rolling cone cutters made of alloy steel. In such applications the granules are preferably of rounded and chunky shapes, avoiding the sharp edges and corners and the slivery shapes which are likely to go into solution with the matrix. Part of the matrix comes from the melted surface of the alloy steel cutter and part preferably comes from a hardfacing welding tube containing the granules.

These rolling cutter gage hardfacings may also utilize compositions heretofore known but not previously used as gage hardfacings, e.g., monotungsten carbide granules with a cobalt binder. Success achieved by the inventors may be attributable in part to powders of ferromanganese and ferromolybdenum added with the granules as part of the filler in the welding tube, a preferred pre-application composition being about 1.0 percent manganese, 0.25 percent molybdenum, balance essentially low carbon steel.

3,800,892

ROCK DRILL BIT

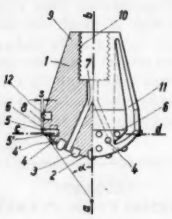
Ernst Fischer, Wien, Austria, assignor to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria

Filed June 4, 1971, Ser. No. 150,134

Claims priority, application Austria, June 5, 1970, 5041/70

Int. Cl. E21b *13/01*

U.S. Cl. 175—410 **4 Claims**



Rock drill bit adapted for use in percussion drilling apparatus, the drill bit having a body generally in the form of a body of revolution which is convex in an axial direction and which has an annular edge of largest diameter lying on a transverse plane disposed normal to the axis of rotation of the bit. A plurality of hard, wear-resistant inserts are mounted on the outer surface of the body of the bit adjacent the said transverse plane.

3,800,893

WEIGHING APPARATUS AND METHOD

Joseph D. Ramsay, Woodbury, and George R. Weaver, Moorestown, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

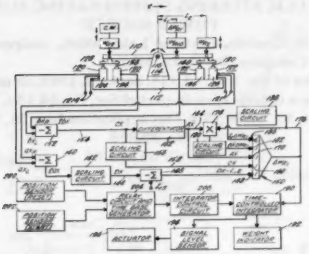
Filed Sept. 5, 1972, Ser. No. 286,104

Int. Cl. G01g *3/14*

U.S. Cl. 177—25 **25 Claims**

High-speed weighing of a train of objects on a delivery belt is accomplished by delivering the objects in sequence to a weighing position on a spring-mounted platform, which responds by executing an oscillatory motion characteristic of the weight of the object; this motion is sensed and signals representative of the instantaneous displacement, of the velocity, and of the acceleration of the platform are produced and used in a computing circuit to compute the weight of the particular object from the second-order differential equation of its motion on the platform. Integrating means are preferably utilized to discriminate against interfering noise in the output

signal of the computing means, and the final output signal may be utilized to operate an indicator or an actuator for diverting or marking overweight or underweight objects. Timing of the weighings of the successive objects is controlled by an object-sensing device which provides indications of when each object is in its weighing position. The spring arrangement supporting



the weighing platform is preferably of a torsionally-resilient beam balance type utilizing crossed leaf-spring pivots to provide the spring restraint. The computing means preferaly provides implicit solution of the differential equation of motion, and utilizes an algorithm which facilitates adjustment of the computing circuit.

3,800,894

DEVICE FOR GRAVIMETRICALLY UNIFORMLY FEEDING OF COMPONENTS TO A MIXING DEVICE

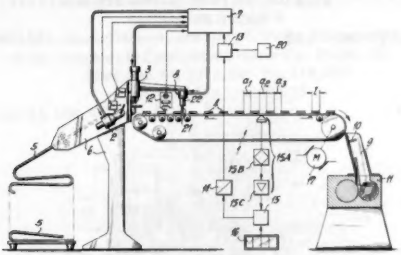
Fridolin Keser, Hemmingen, and Ralf Urban, Hirschlanden, both of Germany, assignors to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed Aug. 1, 1973, Ser. No. 384,493

Claims priority, application Germany, Sept. 8, 1972, 2244059

Int. Cl. G01g *13/00*, *13/02*; **B26d** *7/00*

U.S. Cl. 177—64 **7 Claims**



A device for controllably and uniformly feeding from the output of a source of an endless strip of material, according to weight requirements, sections of strips of the material to the input of a material utilizing device. The apparatus comprises a continuously moving conveyor band leading from the source of strip material to the input of the device. Controllably operating cutting means cut the endless strip and indicating means indicate the length of each section. Controllably operating gates prevent the passage of a section along the conveyor band and measuring means measure the weight of the sections on the conveyor band. A pulse counter responsive to the indicator and the measuring means count a number of pulses related to the length of a section for activating the cutting means to cut the endless strip and for activating the gate to block the passage of a section on the conveyor band for a period of time related to the weight as measured by the measuring means to control the space between sections.

3,800,895

VEHICLE WEIGHING DEVICE WITH A BALANCED ELECTRICAL BRIDGE

Lee G. Gale, P.O. Box 916, Whittier, Calif., and Donald V. Savage, 3133 Cork Ln., Costa Mesa, Calif.

Filed June 19, 1972, Ser. No. 264,159

Int. Cl. G01g *19/08*, *3/14*; **G05f** *3/00*

U.S. Cl. 177—136 **5 Claims**

A weighing device particularly suited for vehicles, comprising strain gauges placed on a structural member of a vehicle, such as an axle of a truck in optimum orientation thereto, to compensate for certain inclinations of the vehicle when it is being weighed. The vehicle weighing device comprises strain gauges placed in a unique configuration on special mechanisms, and on the axles of a vehicle positioned laterally and angularly with respect to each other. The strain gauges are connected to and form a part of a constant current cross balanced bridge circuit which forms a portion of this invention. The circuit incorporates certain amplifiers analogous to operational amplifiers, and balancing techniques in a configuration creating a novel balanced bridge. Thus, this invention comprises a novel balanced bridge configuration and a novel weighing device and forms a new circuit and strain gauge combination, as well as mechanisms for optimum utilization of the gauges.

3,800,896

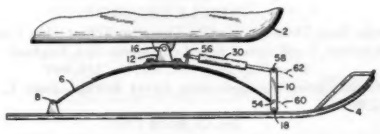
SHOCK ABSORBER MOUNT FOR VEHICLES WITH SKIS

Robert V. Albertson, Minneapolis, Minn., assignor to Zeal Corporation, Excelsior, Minn.

Division of Ser. No. 888,196, Dec. 4, 1969. This application Apr. 19, 1973, Ser. No. 352,676

Int. Cl. B62m *27/02*; **B62b** *17/04*

U.S. Cl. 180—5 R **4 Claims**



A shock absorber mount for vehicles with skis wherein the shock absorber is so attached to the springs and skis that normal shock absorber action is possible.

3,800,897

SUSPENSION SYSTEM

Gerald O. Irvine, Crosby, Minn., assignor to Scorpion, Inc., Crosby, Minn.

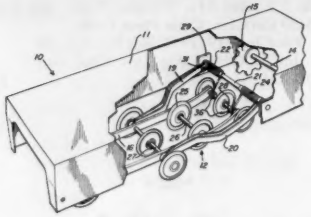
Filed Apr. 27, 1972, Ser. No. 248,320

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **6 Claims**

An improved vehicle suspension system having a chassis for supporting ground engaging means, a support arm pivotally connected at one end to the chassis and pivotally connected at

its other end to the vehicle body, and an improved bias means associated with the chassis and support arm for resiliently



suspending the vehicle body with respect to the chassis and for limiting its upward and rearward pivotal movement.

3,800,898

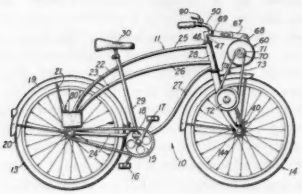
ELECTRICALLY POWERED BICYCLE

Donald R. Griffin, 5229 Pinecrest Dr., Covington, Ga.

Filed May 17, 1972, Ser. No. 253,929

Int. Cl. B62d *61/00*

U.S. Cl. 180—31 **5 Claims**



An electrically powered bicycle having a frame support means with a front steerable wheel and a rear wheel, and wherein electric motor drive means is drivingly connected to the front steerable wheel. The electric motor is supplied with power from a pair of storage batteries, one supported adjacent each side of the axis of the rear wheel and includes selectively operable control means for transferring the power from the storage batteries to the electric motor for effecting rotary driving movement of the front steerable wheel.

3,800,899

VEHICLE CHASSIS

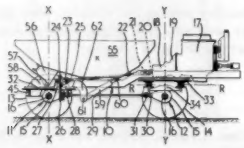
Leslie Basil Thwaites, c/o The Thwaites Engineering Company Limited, Cubbington, near Leamington Spa, England

Filed May 25, 1972, Ser. No. 256,949

Claims priority, application Great Britain, June 1, 1971, 18230/71

Int. Cl. B62d *7/00*

U.S. Cl. 180—49 **14 Claims**



A vehicle chassis frame is supported by two axle assemblies through respective intermediate turntables permitting rotation of each axle assembly about its vertical axis. A pivoting support frame arranged between one of the axle assemblies and its turntable permits its ground wheels to pivot about a horizontal axis relatively to the ground wheels of the other axle assembly. The turntables are turned in opposite senses by a steering mechanism for the ground wheels of one axle to follow the tracks of the corresponding ground wheels of the other axle.

3,800,900

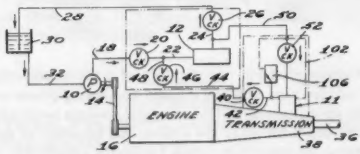
HYDRAULIC STEERING SYSTEM HAVING AUXILIARY POWER SOURCE

William B. Goodale, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 763,228, Sept. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 64,130, July 31, 1970, Pat. No. 3,696,613. This application June 26, 1970, Ser. No. 59,855

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 R **2 Claims**



A hydraulic steering system for a motor vehicle having a primary fluid pressure source and a secondary pressure source. The secondary source comprises a pump driven by the vehicle's transmission upon demand and which is inoperative when the primary pressure source is functioning properly.

3,800,901

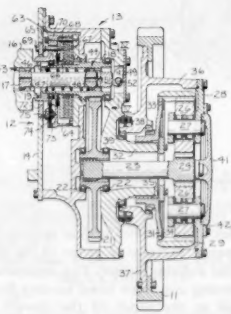
FINAL DRIVE DECOUPLING AND PARKING BRAKE ARRANGEMENT FOR HYDROSTATIC LOADER

Gary D. Blomstrom, Sugar Grove; Carl T. Butler, Aurora; James M. Kostas, Peoria; Czeslaw J. May, Aurora; Robert D. Nesbit, Morton, and Stamos I. Papasideris, Bristol, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,368

Int. Cl. B60k *17/10*

U.S. Cl. 180—9.62 **24 Claims**



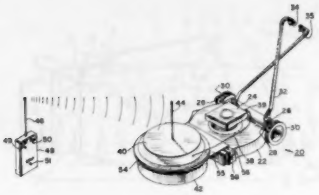
A hydrostatic loader final drive wherein a hydraulic motor transmits power through a quill shaft to reduction gearing coupled to a track driving sprocket wherein means are provided to conveniently disconnect the quill shaft from the reduction gearing or the motor in situations where it is necessary to tow the vehicle with the motor inoperable, and parking and/or emergency brake means are associated with the input side of the reduction gearing to lock same when the motor is inoperable.

3,800,902

METHOD AND APPARATUS FOR THE CONTROL OF SELF-PROPELLED APPARATUS

Richard E. Keller, 1645 Valley Ct., Township of Wash., N.J.

Filed Sept. 26, 1972, Ser. No. 292,447
Int. Cl. B62d 5/00
U.S. Cl. 180—79.1 40 Claims



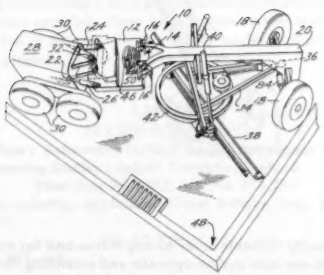
This invention pertains to a radio-actuated, remote control apparatus and method for the functional operation of self-propelled apparatus such as lawn mowers, snow blowers and like equipment. The remote control of the desired operational functions such as turning, stopping and the like in the present invention is applied to three embodiments in which a non-powered wheel steers the machine. This wheel in the turning function is swung to a determined degree from a normal condition providing for straight ahead movement during which the axis of the wheel is parallel to the axis of the powered wheel or wheels rotated by a coupled motor means. In its straight forward motion this wheel, which may be a caster wheel, is allowed to freely swing around its vertical support axis until a turn signal is actuated and the caster wheel is swung around this axis to a determined turn angle condition. This determined turn angle is maintained during the actuation of the turn signal.

3,800,903

COAXIAL STEERING WHEELS FOR AN ARTICULATED MOTOR GRADER

Duane E. Beals, Decatur, and Gary S. Peifer, Waynesville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 17, 1972, Ser. No. 218,408
Int. Cl. B62d 5/06, 13/02
U.S. Cl. 180—79.2 B 1 Claim



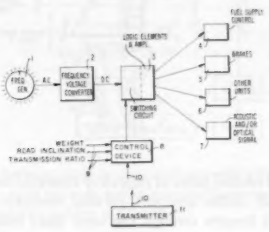
An auxiliary, fingertip-controlled steering wheel for a motor grader is provided which is mounted forwardly and concentrically adjacent to a standard steering wheel so that conventional and/or articulated steering can be selectively and most effectively achieved.

3,800,904

METHOD AND APPARATUS FOR LIMITING THE VELOCITY OF A VEHICLE, ESPECIALLY OF MOTOR VEHICLES, TO A DESIRED VELOCITY

Hermann Zelenka, Bernhausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 7, 1972, Ser. No. 278,388
Claims priority, application Germany, Aug. 6, 1971, 2139411
Int. Cl. B60k 27/00
U.S. Cl. 180—105 E 23 Claims



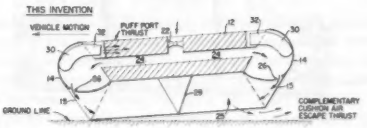
A method and apparatus for limiting the velocity of vehicles, especially of motor vehicles to a desired velocity, in which a frequency proportional to the vehicle velocity is produced by a frequency generator coordinated to one wheel, which is converted by a frequency-voltage converter into a D.C. voltage that acts on a switching circuit in such a manner that upon exceeding a voltage proportional to the selected, desired velocity, a switching signal is triggered which, in its turn, acts on the fuel supply, the brake system, and/or other units in a velocity-reducing sense.

3,800,905

FLEXIBLE INFLATED PUFF-PORT SYSTEM

Raymond Grenville Whitehead Wright, and Anthony Yelverton Simpson, both of New Orleans, La., assignors to Textron Inc., Providence, R.I.

Filed May 25, 1972, Ser. No. 257,015
Int. Cl. B60v 1/00
U.S. Cl. 180—117 11 Claims



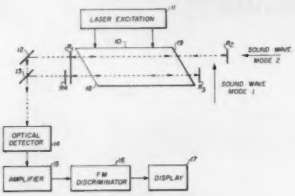
An improved "puff-port" device and control system for an air cushion vehicle, energizing for a prescribed maneuver either one of a pair of oppositely directed puff-port reaction nozzles (carried by the vehicle) by selectively bypassing thereto some of the vehicle cushion feed air from the normal supply to the air cushion seal system at one side of the vehicle, so as to induce a vehicle roll effect causing a differential of cushion air escape thrust reaction forces at opposite sides of the vehicle, resulting in a complement to the effectiveness of the puff-port reaction forces. The system provides improved maneuvering control for turning and/or displacing the vehicle in any desired maneuver; and in any case (whether operative or not) the puff-port devices are also adapted to function as pneumatic shock absorbers, protecting the vehicle hard structure against damage such as when docking the vehicle.

3,800,906

LASER HETERODYNE ACOUSTIC SENSOR

Donald J. Albares, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1972, Ser. No. 282,822
Int. Cl. G01c 3/08
U.S. Cl. 181—.5 NP 6 Claims



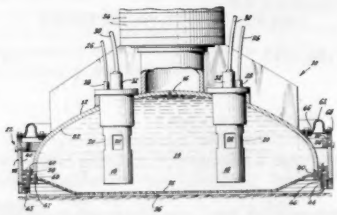
First and second pairs of reflective elements including a single laser cell, define adjacent, parallel, resonant optical paths of different lengths through the same laser medium. One of the resonant optical paths is exposed to acoustic energy, changing its effective optical path length and the wavelength of the laser energy emitted by that path. Changes of the beat frequency between the two laser beams generated in the two resonant optical paths are detected and appropriately displayed as an indication of the intercepted acoustic energy.

3,800,907

DISPLACEABLE DIAPHRAGM STRUCTURES FOR USE IN SEISMIC IMPULSE TRANSMISSION

Stephen V. Chelminski, West Reading, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Continuation of Ser. No. 888,759, Dec. 29, 1969, abandoned.
This application July 31, 1972, Ser. No. 276,883
Int. Cl. G01v 1/14
U.S. Cl. 181—.5 EC 2 Claims



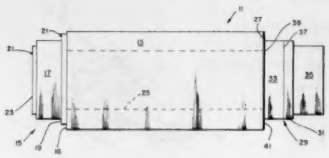
Improved diaphragm structures are described wherein a movable metal or composite diaphragm is used to couple and transmit an intense acoustical seismic impulse into the medium below. The displaceable diaphragm is positioned and slideably attached at the bottom of a closed tank containing a substantially incompressible transmitting liquid such as water. Above the diaphragm and inside of the tank is positioned one or more devices for abruptly releasing pressurized gas, such as a high pressure repeatable gas releasing airgun. When the airgun is "fired" it releases a sudden powerful blast of pressurized gas, the powerful impulse from it is transmitted through the water in the tank to the diaphragm which moves downwardly and in turn transmits the seismic energy impulse into the sound conducting medium below, which may be land, marshland, mud, swamp, sand, water, gravel, rock, etc. The diaphragm may be used to repeatably transmit such seismic impulses into the earth by repeatably firing the airgun device within the fluid filled tank.

3,800,908

TERMINATED ACOUSTIC WAVE DEVICE

Michael T. Wauk, II, Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 26, 1973, Ser. No. 344,672
Int. Cl. H03h 9/00
U.S. Cl. 181—.5 R 18 Claims



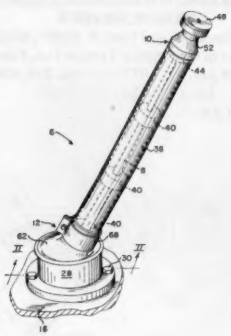
An acoustic wave device wherein a termination is mounted on an acoustic wave medium in order to attenuate reflected acoustic wave energy. The device incorporates a thermal isolation layer between the medium and the termination to prevent heat generated in the termination from reaching the medium and causing undesirable consequences.

3,800,909

NOISE-SUPPRESSING CONTROL LEVER FOR VIBRATION PRONE MECHANISMS

William T. Duncanson, Pekin, and James C. Kennedy, Jr., Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 17, 1972, Ser. No. 272,406
Int. Cl. G05g 9/00
U.S. Cl. 181—33 A 7 Claims



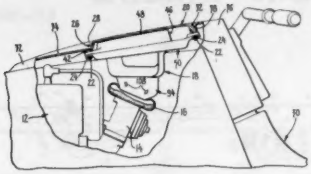
A manually shiftable lever having a free end for manipulation by an operator and an opposite end extending through an opening in a housing where noise may originate includes a sleeve mounted coaxially on the lever by axially spaced resilient rings, and a resilient cover connecting the sleeve to a collar mounted on the housing so that the lever is effectively enclosed by vibration dampening means to minimize the transmission of noise through the lever itself as well as suppressing the passage of airborne noise through the lever opening in the housing.

3,800,910

APPARATUS FOR DIRECTING AIR FLOW AND SOUND WAVES

Jack H. Rose, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 2, 1972, Ser. No. 277,462
Int. Cl. F01n *1/00, 5/00;* **F02m** *35/00*
U.S. Cl. 181—35 A **9 Claims**



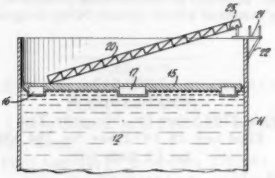
An enclosure, in the form of a mold, attached to the hood or cowling of a vehicle engine, having an air inlet integral with the hood or cowling, combines with the hood to form passages for flow of combustion air to the engine as it passes through the mold. The mold provides cold air to the engine, and in combination with a boot provides control of noise emanating from the engine while being attached to and movable with the hood to provide access to the engine.

3,800,911

FLOATING ROOF TANK LEVEL ALARM

Stuart Arthur Reynolds, Saint Denijs, and Hugh Goodman Story, Afsnee, both of Belgium, assignors to S.A. Texaco Belgium N.V., Brussels, Belgium

Filed Jan. 7, 1972, Ser. No. 216,049
Int. Cl. E06c *5/34*
U.S. Cl. 182—18 **5 Claims**



Combined with a storage tank that has a floating roof and a ladder which changes its angle of incidence to the roof as the ladder rises and falls, there is an angular position-responsive switch that is actuated by the ladder angle. The switch may control a high-level alarm circuit.

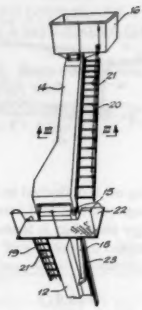
3,800,912

ACCESS EQUIPMENT

Denis Henry Ashworth, Dudley, England, assignor to Simon Engineering Dudley Limited, Cheshire, England

Filed July 24, 1972, Ser. No. 274,247
Claims priority, application Great Britain, Aug. 13, 1971, 38181/71
Int. Cl. E06c *5/06*
U.S. Cl. 182—65 **9 Claims**

Access equipment having an articulated boom structure comprising two or more booms pivoted end to end, the lowermost boom being pivotally mounted on a supporting structure such as a vehicle, the boom structure being movable between a stowed position wherein said boom are located adjacent the supporting structure and a working position wherein the free end of the boom structure is raised to an elevated position above the supporting structure, characterised by the provision of a ladder extending alongside each of a pair of adjacent booms, said ladders being arranged on opposite sides respectively of said pair of booms and there being a landing at the knuckle joint between said booms and extending between the two ladders so as to provide easily negotiable means for a person to pass from one ladder to the other.

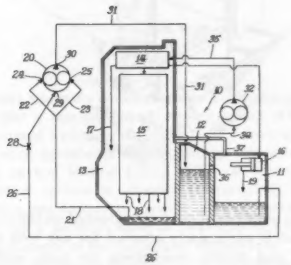


3,800,913

RECIRCULATING OIL SYSTEM

James L. Schmitt, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 4, 1972, Ser. No. 278,014
Int. Cl. F01m *1/12*
U.S. Cl. 184—6.13 **8 Claims**



There is disclosed an oil supply and recirculating system for a motor vehicle in combination with the transmission and differential of the vehicle. The oil supply system comprises an oil reservoir comprising three separate oil receiving chambers, one of the reservoirs being the main oil supply reservoir, with one chamber receiving and serving as the transmission sump, while the remaining reservoir serves as the differential sump and overflow reservoir for the main supply reservoir. The system includes a main supply and control system pump for supplying pressurized fluid for operation and control of the transmission, and a second scavenging pump operative to scavenge the transmission sump and to recirculate oil from the overflow tank to the main supply tank.

3,800,914

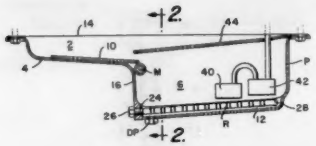
MAGNETIC FILTER FOR LUBRICANTS

Saburo Miyata, 19-47 Takanawa 3-chome, Tokyo, Japan

Continuation-in-part of Ser. No. 14,346, Feb. 26, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,119
Int. Cl. F01m *11/00;* **B01d** *35/06*
U.S. Cl. 184—6.25 **14 Claims**

A magnetic filter for removing ferrous particles from a lubricating system. A magnetic rod is supported in a channel

formed in the bottom of a lubricant pan to attract and retain ferrous particles. In one form of the invention an automobile crank case pan is formed with a shallow and a deep chamber.

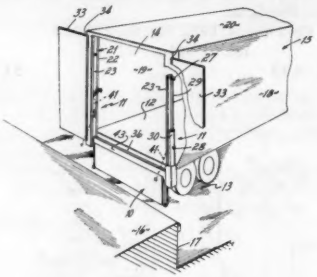


The flowing lubricating oil is collected in the shallow chamber and passed over a magnetic rod and into the deep chamber. The bottom of the deep chamber is formed with a channel in which is mounted a second magnetic rod.

3,800,915
CARGO PLATFORM

William H. Himes, 2910 Catalpa Dr., Dayton, Ohio

Division of Ser. No. 115,837, Feb. 16, 1971, which is a continuation of Ser. No. 872,108, Dec. 29, 1969, abandoned. This application May 29, 1973, Ser. No. 364,958
Int. Cl. B60p *1/44*
U.S. Cl. 187—1 **6 Claims**



A cargo platform of the type mounted on the rear of trailer trucks that is particularly adapted for use with a combined elevating and storing mechanism for such platforms. The cargo platform includes, in the preferred embodiment, a first section of the platform mounted along the front edge thereof to the combined elevating and storing mechanism by a first pivotal joint, a second section of the cargo platform mounted to the first section adjacent the rear edge of the first section by a second pivotal joint, supports associated with the two sections for holding the sections in platform configuration when desired, locks associated with the two sections for holding the two sections in sandwich configuration when desired, the sections being pivotable between platform configuration and sandwich configuration by means of the second pivotal joint, and at least one wheel fixed to one of the sections adjacent that edge where the sections are pivotally joined, the wheel providing a rolling surface that maintains contact with the ground as the platform, when in sandwich configuration, is lifted at the first pivotal joint from a horizontal attitude whereat it rests on the ground and extends outwardly of the first pivotal joint to a vertical attitude whereat it hangs in the same plane as the vertical plane incorporating that first pivotal joint.

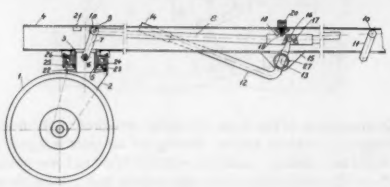
ERRATUM

For Class 187—73 see:
Patent No. 3,800,918

3,800,916
LOCKING MECHANISM FOR SETS OF CASTORS SUPPORTING APPARATUSES, MACHINES, OR FURNITURE

Finn Andre Kjellberg; Svend Edvard Nielsen Lemvig, and Bent Ivan Kjellberg, all of Ronne, Denmark, assignors to Trioteam A/S, Ronne, Denmark

Filed Nov. 14, 1972, Ser. No. 306,298
Int. Cl. B60t *1/04*
U.S. Cl. 188—1 D **6 Claims**

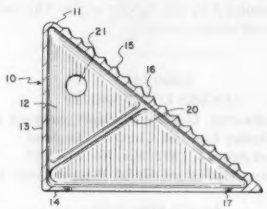


A locking mechanism for sets of castors supporting apparatuses, machines or furniture is described, in which mechanism each wheel is mounted in a fork being rotatable around a tubular carrier fastened to a supporting frame for the apparatus, machine or piece of furniture, each of the tubular wheel carriers enclosing in sliding fit a tubular part of a locking member, which is movable up and down, but not revolving in the wheel carrier, and which at its underside carries a brake flange which can be brought to bear either against the wheel or, if desired, against the wheel fork to prevent it from revolving, whereas the locking members are pairwise operated by means of a lever system being designed as a toggle press.

3,800,917
WHEEL CHOCK

Merlin E. Vick, 4708 Salem Dr., Mesquite, Tex.

Filed Aug. 28, 1972, Ser. No. 284,338
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **2 Claims**



There is disclosed an improved wheel chock in the form of a hollow wedge with a ribbed inclined tire gripping face and a base which is concave upwardly to form ground gripping rails whose contact area with the ground varies with the loading of the wedge.

3,800,918

DECKING DEVICE FOR MINE CAGES AND THE LIKE CONVEYANCES

Ivan Falkland Watt, Florida Park, South Africa, assignor to Anglo American Corp. of South Africa Limited, Johannesburg, South Africa

Filed Sept. 5, 1972, Ser. No. 286,260

Claims priority, application South Africa, Sept. 9, 1971, 71/6052; Oct. 26, 1971, 71/7166

Int. Cl. B66b *5/16*

U.S. Cl. 187—73 **8 Claims**

A decking device for use in a hoisting system of the general type having a shaft and a conveyance supported in the shaft by a cable. The device has two jaws movable in a guide towards each other to a first position in which they engage a structure on the conveyance to immobilize the same in the shaft, and away from each other through a second position in which one of the jaws is in contact with the structure to a third position in which the jaws are retracted and can no longer contact the structure. The jaws are driven between the first and third positions at a controlled speed to eliminate any tendency for the conveyance to move uncontrollably in the shaft due to stretch in the cable.

3,800,919

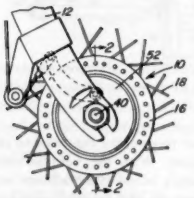
WHEEL HUB WITH FLOATING BRAKE BAND AND FLOATING AXLE

Raymond B. Leach, Omaha, Nebr., assignor to Hill City Mfg., Inc., Hill City, Kans.

Filed Aug. 10, 1972, Ser. No. 279,981

Int. Cl. B62l *5/12*

U.S. Cl. 188—26 **8 Claims**



A wheel hub incorporating an outer annular member and an inner annular member with the outer annular member being connected with a supporting wheel structure or the like and the inner annular member being connected with an axle. The inner and outer annular bearing members are rotatably interconnected by axially spaced bearing assemblies with a floating internal brake band non-rotatably associated with the inner annular member and selectively frictionally engaged with the interior of the outer annular member when expanded to serve as a brake. In another embodiment of the invention, the wheel hub is provided with a floating axle that is resiliently supported from an inner annular member.

3,800,920

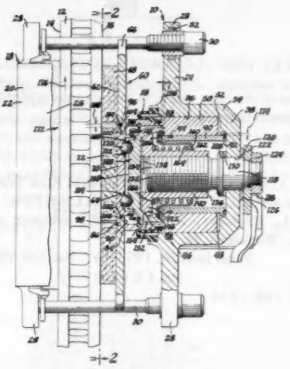
SELF-ENERGIZED DISC BRAKE PARKING BRAKE INTEGRAL WITH A NON-ENERGIZED SERVICE DISC BRAKE

Edward H. Warwick, Englewood, Ohio, assignor to General Motors Corp., Detroit, Mich.

Filed Apr. 27, 1973, Ser. No. 355,189

Int. Cl. F16d *65/14, 55/46*

U.S. Cl. 188—106 F **4 Claims**



A disc brake assembly which contains a self-energized parking brake and a non-energized service brake. The service brake is actuated hydraulically, with fluid pressure acting on an inboard shoe peripheral section through the piston. An inboard shoe central section fitting within an opening of the shoe peripheral section is actuated mechanically through a self-energizing mechanism to provide parking brake capability. The two shoe sections have an overlapping construction such that movement of the peripheral section into braking engagement with the disc is transmitted to the shoe central section to also engage it with the disc. However, during the parking brake mode of operation only the central section engages the disc in braking relation. The brake mechanism is automatically adjusted as the brake shoes wear.

3,800,921

DASHPOT ASSEMBLY WITH SHEATH HAVING BUILT-IN VALVE

Arthur M. Cohen, Westport, Conn., assignor to Airpot Corporation, Norwalk, Conn.

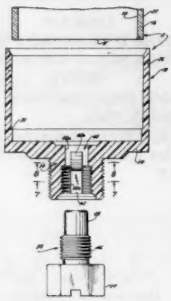
Filed Jan. 28, 1972, Ser. No. 221,540The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.

Int. Cl. F16f *9/44*

U.S. Cl. 188—298 **24 Claims**

The cylinder of a dashpot is formed from an accurately dimensioned rigid tube which is received within a soft plastic sheath, the latter surrounding the side walls of the tube and also closing the end of that tube. Integrally formed in the sheath is a specially constructed adjustable valve by means of which the damping action of the dashpot can be controlled. The movable portion of that valve is preferably formed of the same material as the sheath and is received within the sheath with an interference fit, whereby the siding of the valve is substantially insensitive to vibration and to temperature varia-

tions. The sheath may overlie the cylinder tube, thereby positively to retain it in position, and may also extend over the



open top of the tube, thereby to prevent accidental withdrawal of the piston from the cylinder.

3,800,922

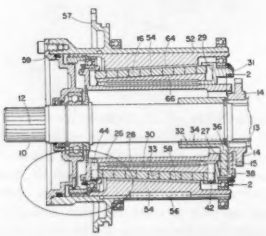
ADJUSTMENT MECHANISM FOR TORQUE TRANSMITTING AND LOAD LIMITING DEVICE

Ralph L. Kreissler, Rockford, Ill., assignor to Sundstrand Corp., Rockford, Ill.

Filed Jan. 26, 1973, Ser. No. 326,992

Int. Cl. B60t *7/12*

U.S. Cl. 188—134 **11 Claims**



A torque transmitting and load limiting device including a coil spring serving as the principal torque transmitting member. When normal torque is transmitted, the coil spring engages an inner member, but when an excessive load is encountered, it expands and engages an outer member, producing a braking action. The coil spring is tapered, and means is included for adjustably varying the value, or point, considered radially, at which the braking action takes place. The adjustment is made by means of a threaded adjusting means. The device is designed so that it can be used with the input member and the output member respectively at opposite ends of the device and for either direction of rotation.

3,800,923

DISC BRAKE CALIPER AND FRICTION PAD MOUNTING MEANS

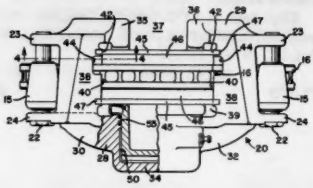
Russell E. Rike, Bellbrook, Ohio, assignor to The Dayton Steel Foundry Co., Dayton, Ohio

Division of Ser. No. 66,528, Aug. 24, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,194

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.6 **2 Claims**

A disc brake employs a one-piece caliper which is open at the top and at the back to receive a boring tool for finishing the hydraulic cylinder. The cylinder cavity is formed with a piston supporting and sealing surface adjacent the open end and with an unfinished counter bore of substantial depth. A slot is formed in the caliper housing through which the



backing plates may be removed inwardly through the caliper housing for replacement.

ERRATUM

For Class 188—161 see:
Patent No. 3,800,562

3,800,924

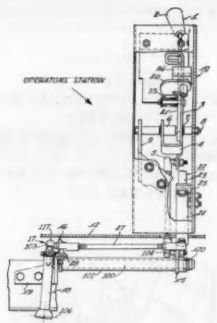
CONTROL LEVER TO ACTUATE REMOTE SHIFT LEVER

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Dec. 29, 1972, Ser. No. 319,350

Int. Cl. G05g *9/16;* **F16d** *67/00*

U.S. Cl. 192—4 A **10 Claims**



A control lever to operate the remote shift lever through a shifting mechanism. With the vehicle transmission centrally located immediately below the platform on a vehicle, the shift lever is positioned on the transmission housing for selective positioning of the shift lever in park or one of the plurality of shift ranges. A shifting mechanism including a control lever in the control panel on the side of the platform is provided with a lateral shift selector mechanism to selectively position the shift lever in its proper transverse position to selectively engage a shift rail in the transmission. The control lever operates through a shift linkage connected between the control lever and the shift lever responsive to pivotal movement of the control lever to reciprocate the selected shift rail to thereby shift the transmission to park or one of the plurality of shift ranges in the transmission.

3,800,925

OVERRUNNING ROLLER BEARING COUPLING FOR ENGINE STARTER

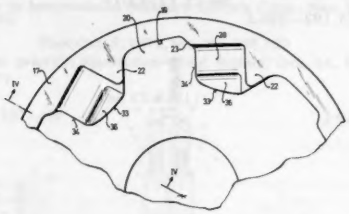
Rudeger Luders, Stuttgart; Richard Negele, Esslingen-Rudern, and Walter Ruhle, Korntal, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 10, 1972, Ser. No. 295,812

Claims priority, application Germany, Nov. 25, 1971, 2158380

Int. Cl. F16d *41/06*

U.S. Cl. 192—45 15 Claims



The flange joining the drive sleeve of a starter coupling with the outer race of a one-way roller bearing, instead of having a flat surface on the bearing side, is provided with raised portions shaped to position the helical springs so that they may be centered lengthwise of the rollers where they engage the latter. The seating benches thus formed are located between the wedging surfaces of the outer race and the support lugs for the springs, and they are shaped to facilitate production of sleeve, flange and outer race together with lugs and seating benches in one piece by deep drawing methods.

3,800,926

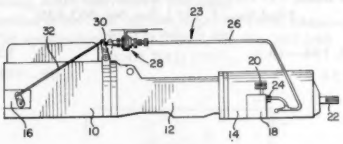
IPTO SPEED LIMITING CONTROL VALVE

Richard A. Hale, Downers Grove, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Jan. 8, 1973, Ser. No. 321,908

Int. Cl. B60k *25/00*

U.S. Cl. 192—.084 5 Claims



Pressure is sensed in the multiple control valve of the IPTO assembly. By hydraulic means the pressure variations are communicated to a hydraulic piston which, via a linkage assembly, modifies the work cycle of the engine governor.

3,800,927

ONE WAY CLUTCH

Nobuo Takata, Osaka, Japan, assignor to Toskin Seiki Co., Ltd.

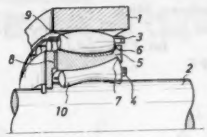
Filed Sept. 7, 1972, Ser. No. 287,097

Claims priority, application Japan, June 14, 1972, 47-58620

Int. Cl. F16d *41/07*

U.S. Cl. 192—45 5 Claims

This invention is to provide a novel one-way clutch mechanism arranged characteristically such that a clutch ring so shaped as to be gradually increased in thickness from one side to the other is inserted between the inner and outer races through the media of sprag means inclined at a given angle relative to the axis of said inner and outer races, whereby the axial movements of said sprag means caused in conversion



from and to the clutch action and the rolling action are all absorbed by said clutch ring.

3,800,928

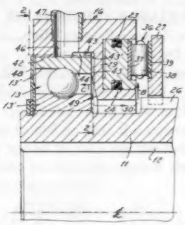
POSITIVE LUBRICATION HYDRAULIC DISC CLUTCH

Lawrence H. Pray, Sterling Heights, Mich., assignor to Formsprag Co., Warren, Mich.

Continuation-in-part of Ser. No. 82,944, Oct. 22, 1970, Pat. No. 3,684,069, and a continuation-in-part of Ser. No. 82,115, Oct. 19, 1970, which is a continuation of Ser. No. 825,567, May 19, 1969, abandoned. This application July 10, 1972, Ser. No. 270,240

Int. Cl. F16d *25/08*

U.S. Cl. 192—85 CA 27 Claims



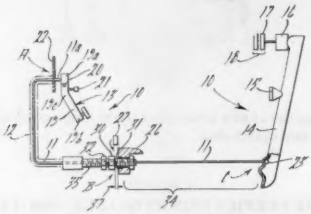
The clutch features a conventional friction disc stack spring-urged to release condition and engaged to clutch by a hydraulically powered piston which compresses the stack axially through the agency of needle bearing means. The piston operates in an annular cylinder supplied from the exterior by hydraulic pressure fluid entering a supply fitting of a fixed mounting member of the clutch, which fluid also pressure-lubricates both the needle bearing and a combined radial and axial thrust-type ball bearing. The latter is received in a space in the mounting member located on a side of a radial cylinder wall of said member opposite the wall side which in part defines the piston's cylinder space. The mounting member is specially end face-milled locally in the annular zone receiving the ball bearing to provide a quasi-cylindrical and radially relieved internal bore and counter-bore formation, into and through which the pressure liquid flows from the fitting under a throttling force-augmenting effect. This is by reason of the flow restriction imposed by the special end face machining, flow being in the portion of the bore and counter-bore not occupied by the radial being, thence through an axial zone between the cylinder portion of the mounting member and an axial driver of the clutch journalled by said member, thence radially outwardly to lubricate the needle bearing unit. Forced lubricant flow also takes place simultaneously in the opposite direction to similarly pressure-lubricate the radial ball bearing; and in both instances the circulation of lubricant is entirely external and independent of passage means into or through the pressure cylinder.

3,800,929

AUTOMATIC CLEARANCE ADJUSTER FOR CLUTCH BEARING

George R. Morris, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 7, 1972, Ser. No. 278,676
Int. Cl. F16d 13/75
U.S. Cl. 192—99 S 1 Claim



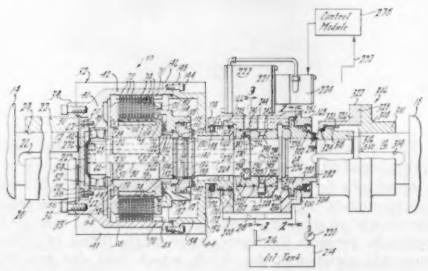
Linkage having integral slack adjustment gauge for use particularly with a clutch-operating fork actuated by flexible or rigid force links connecting to a manually operated pedal. The integral gauge has spaced seats of differential depths relative to the actuating link so that a shift of engagement from one seat to the other changes the stroke of the force link thereby providing a predetermined free travel for said pedal.

3,800,930

VARIABLE SPEED DRIVE

Gordon M. Sommer, Grosse Pointe, Mich., assignor to G. M. Sommer Co. Inc., Detroit, Mich.

Filed Sept. 22, 1972, Ser. No. 291,217
Int. Cl. F16d 25/62, 13/72, 13/74
U.S. Cl. 192—104 F 20 Claims



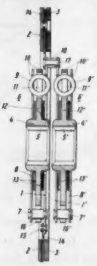
A variable speed drive, adapted to be mounted between and supported by a motor shaft and a driven shaft, comprising: a rotatable housing defining a fluid reservoir, and drivingly connected to the motor shaft; an output shaft having an end section located in the fluid reservoir, and an opposite end drivingly connected to the driven shaft; a clutch disc stack including a first series of drive discs located in the fluid reservoir and supported for rotation by the housing, and a second series of driven discs interleaved with the drive discs, and supported for rotation with the output shaft; and a piston actuator slidably located at one end of the clutch disc stack, and adapted to compressively engage the clutch disc stack. The loading pressure of the clutch disc stack is selectively modulated by the piston actuator to provide variable rotary motion to the output shaft by a control system which includes an electrically operable servo relief valve for controlling the piston, and a control module which provides a variable output signal to the valve in response to a desired preset rotary output speed characteristic. In another form of the subject invention the drive is modified to selectively accelerate the output shaft to the speed of the drive motor, for use in starting high inertia, constant speed, equipment. This form of the drive includes a larger actuating piston to provide increased torque.

3,800,931

CLUTCH DISC

Paul Maucher, Sasabach, Germany, assignor to Luk Lamellen Und Kupplungsbau GmbH, Buhl, Germany

Filed Jan. 18, 1971, Ser. No. 107,167
Claims priority, application Germany, Jan. 17, 1970, 2002039
Int. Cl. F16d 3/14
U.S. Cl. 192—106.2 21 Claims



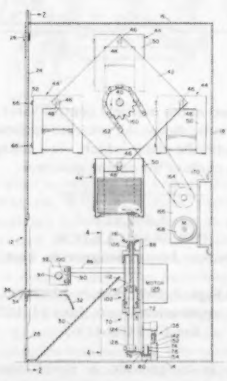
Clutch disc includes a pair of vibration-absorbing devices disposed in a force-transmitting path between a friction lining carrier and an output part of the clutch disc, and further includes at least one input part and a respective driven part in the form of a hub part provided with teeth for form-lockingly connecting the same with a driving member, and force-storing means located between the input part and the hub part, the input part and the hub part being relatively rotatable in direction opposing biasing action of the force-storing means, the vibration-absorbing devices being connected in parallel.

3,800,932

COIN OPERATED CARD VENDING MACHINE

Eugene Dana, 937 18th St., Santa Monica, Calif.

Filed Nov. 3, 1972, Ser. No. 303,539
Int. Cl. G07f 11/42
U.S. Cl. 194—10 12 Claims



A vending machine for postcards and the like having a case within which are mounted a plurality of cradles in a ferris-wheellike array and with each cradle having a number of

storage magazines. The assembly of cradles are rotatable, and the cradles carry display panels bearing samples of the merchandise in the magazines and viewable through a window in the case. A coin operated vending mechanism withdraws the merchandise from the magazines, and the vending mechanism is positioned with respect to the merchandise by reference to the display panels.

3,800,933

PRINTED AND CARRIAGE CONTROL THEREFOR

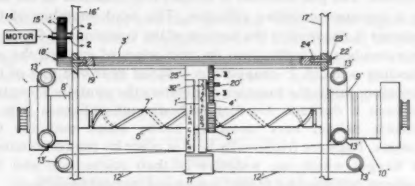
Terence Francis Edward Taylor, Burgess Hill, England, assignor to International Standard Electric Corp., New York, N.Y.

Filed Oct. 5, 1972, Ser. No. 295,153

Claims priority, application Great Britain, Oct. 14, 1971, 47836/71

Int. Cl. B41j *1/32*

U.S. Cl. 197—49 **2 Claims**



A teleprinter or the like wherein a typewheel is rotated around a helically grooved rod. The typewheel has an internal projection to ride in the groove. The rod is rotated at different speeds for carriage advance, stop and return. The typewheel is rotated continuously.

3,800,934

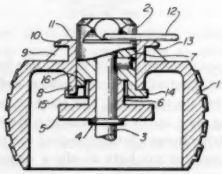
MOUNTING MEANS FOR SINGLE ELEMENT TYPE CARRIER

Herbert Decker, Lauf, Germany, assignor to Triumph Werke Nuernberg, A.G., Nuernberg, Germany

Continuation of Ser. No. 76,784, Sept. 30, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,190

Int. Cl. B41j *1/60*

U.S. Cl. 197—52 **4 Claims**



In a typewriter in which different type carriers are exchangeably attachable to a support arbor which is a permanent part of the machine, a manipulative device is carried on said arbor and in one position thereof freely allows the placement of a type carrier on said arbor or its removal therefrom, and by movement of the device to another position, a means thereof moves outwardly beyond said arbor onto the type carrier to secure the latter to the arbor. The type carrier includes a brim projecting from its top portion by which it can be grasped and said means moves onto said brim.

3,800,935

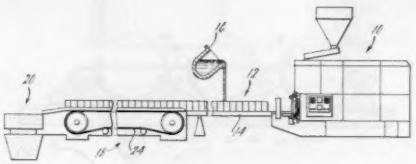
CONVEYOR DRIVE CONTROL SYSTEM

Clifford S. Montgomery, Dallas, Tex., assignor to J. N. Fauver, Inc., Madison Heights, Mich.

Filed Sept. 30, 1971, Ser. No. 185,246

Int. Cl. B65g *47/00, 69/00*

U.S. Cl. 198—24 **16 Claims**



A control system for a conveyor drive which is particularly adapted to be utilized in conjunction with a flaskless-molding system wherein the two halves of the mold are formed on opposite sides of a single, unitary, sand structure, successively manufactured, identical halves of the mold being brought together on a conveyor system by means of a ram, the control system controlling the amount of pressure introduced to the end of the plurality of aligned molds being controlled by the control system of the present invention. The control system includes a pressure sensing transducer to sense the hydraulic pressure operating a ram in a flaskless mold system, the ram being utilized to push a plurality of flaskless molds unto a conveyor, the control system being utilized to equalize the pressure in the ram by controlling the speed of a conveyor unto which the flaskless molds are being pushed. The control system also includes a zero speed adjust to insure that the conveyor is when the ram is fully retracted and also an adjustment to provide a creep speed so that the conveyor drive is being operated at a low speed to take up the belt slack in the conveyor drive and also to initially stretch the belt prior to full operation of the conveyor drive.

3,800,936

DEVICE FOR FORMING GROUPS OF OBJECTS MOVED ON A CONVEYOR AS A SINGLE LAYER SEQUENCE

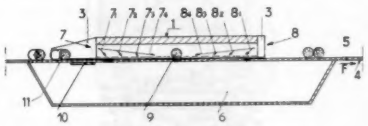
Henri Anfossi, Orleans, France, assignor to Service D'Exploitation Industrielle Des Fabacs, Paris, France

Filed Dec. 20, 1971, Ser. No. 209,915

Claims priority, application France, Dec. 23, 1970, 7046370

Int. Cl. B65g *47/26*

U.S. Cl. 198—34 **9 Claims**



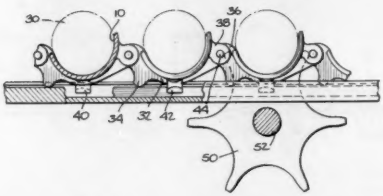
A device for grouping in a specified number, objects which are moved as a single layer sequence on a conveyor unit, in particular, substantially cylindrical rod-shaped objects and, particularly cigarettes, which are moved cross-wise with respect to their axis, the latter being adapted to let air flow through it comprising at least one suction chamber associated with said conveyor unit so that said objects are subjected to that suction over at least one zone of said conveyor unit and a tunnel which extends longitudinally above said conveyor unit, is laterally air-tight and open at its ends and covers said zone of said conveyor unit.

3,800,937

CONVEYOR MECHANISM

Douglas Pray Tassie, St. George, Vt., assignor to General Electric Co., Burlington, Vt.

Filed Aug. 9, 1971, Ser. No. 170,137
Int. Cl. B65g 15/60, 23/04
U.S. Cl. 198—131 1 Claim



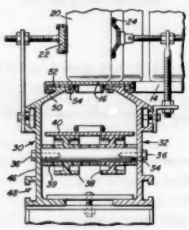
An endless conveyor system comprises an endless train of cradles, and a triple set of track, each cradle including a pivotal connection to the next proceeding cradle, a left depending and laterally extending foot, a right depending and laterally extending foot and a centrally depending foot; the set of track including a left track having a lateral rabbet receiving the cradles' left feet, a right track having a lateral rabbet receiving the cradles' right feet, and a central track supporting the cradles' central feet; whereby said 3 feet of each respective cradle and the central foot of the next succeeding cradle limit the rotation of said respective cradle about the respective axis of the left and right feet of said respective cradle.

3,800,938

CONVEYOR ASSEMBLY WITH EXTRUSIONS HAVING INCLINED CORNERS

Guthrie B. Stone, Honeye, N.Y., assignor to Stone Conveyor, Inc., Honeye, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,936
Int. Cl. B65g 15/60
U.S. Cl. 198—204 4 Claims



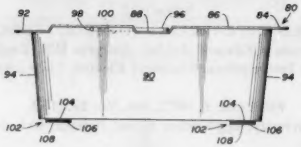
A conveyor assembly comprising an elongated pair of oppositely disposed extrusions with wear strips mounted along their top surfaces to slidably support a conveyor chain, means interconnecting the extrusions and supporting return rollers for the chain, the upper corner portions of each extrusion including an inclined web extending outwardly and downwardly from the wear strip to permit movement of materials between the chain and a transfer disc with its periphery overlying the inclined web.

3,800,939

REMOVABLE VEHICLE TRAY

Victor W. Cornelius, Eastland, Tex.

Filed July 2, 1971, Ser. No. 159,399
Int. Cl. B60n 3/10; B65d 21/02, 25/06
U.S. Cl. 206—19.5 R 5 Claims



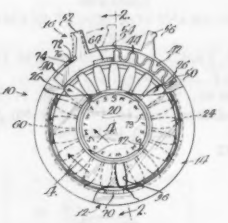
A molded plastic container is removably connectable to an automobile seat, dash or other surface by a hook and pile fastener. The pile member is temporarily attached to the seat by a pressure sensitive adhesive. The hook member of the fastener is attached to the bottom of the container. A flange or lip extends outwardly from the top edges of each of the upstanding walls. A U-shaped arm pivoted near one end of the container fulfils the function of dividing the container into two sections if desired. Another embodiment utilizes a pair of slidable divider bars including hooks which embrace the flanges. They are frictionally held in place by the combination of flanges which are widened in their midsection and the resilient deformation of the flanges and elongate side walls.

3,800,940

PROGRAMMED PILL DISPENSER

Michael D. Thomas, 640 Fern Ct., Elmhurst, Ill.

Filed July 15, 1971, Ser. No. 162,878
Int. Cl. B65d 83/04
U.S. Cl. 206—42 21 Claims



A pill dispenser consisting of a circular base having a plurality of circumferentially spaced pockets defined therein with a cover rotatable on the base. The pockets are preferably upwardly opening. The cover has a single pill exit, and the device incorporates drive means for advancing the pill exit into alignment with successive pockets to allow removal of individual pills from the respective pockets.

3,800,941

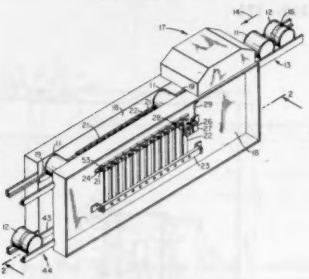
CAN SORTER

John L. Powell, Turlock, Calif., assignor to Mandrel Industries, Inc., Houston, Tex.

Filed Jan. 24, 1973, Ser. No. 328,173
Int. Cl. B07c 3/02
U.S. Cl. 209—74 R 6 Claims

Cans rolling on a track are inspected by photoelectric means for the presence or absence of a circumferential marking band, and in accordance with the sensing made, are either

permitted to continue rolling on the track, or are dropped through to a lower track. To carry out the drop, the upper track is formed with a number of discrete segments displaceable outboardly, the upstream pair of segments being operated by electromagnets under the control of the inspection means



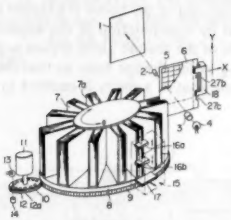
to initiate the drop, and the upstream sides of the segments having cam surfaces engageable by a can that has already begun to drop to cause full displacement of the segment and a continuation of the drop. Each segment is shorter than the radius of a can so that it closes in behind a dropping can before the next following can arrives.

3,800,942

INFORMATION CARD RETRIEVAL DEVICE

Junichi Hirata; Seiichi Hayashi, both of Hitachi, and Kazuo Sakai, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 349,956
Claims priority, application Japan, Apr. 14, 1972, 47-36927
Int. Cl. B07c *3/10*
U.S. Cl. 209—80.5 **4 Claims**



An information card retrieval device comprising a multiplicity of jackets each for containing an information card carrying picture information, a plurality of magazines each for containing a plurality of such jackets, a drum for supporting said plurality of magazines in juxtaposition, and a means for transporting the magazines on the drum at random to a selector means thereby to accomplish the retrieval of a desired information card from a desired magazine transported to the selector means.

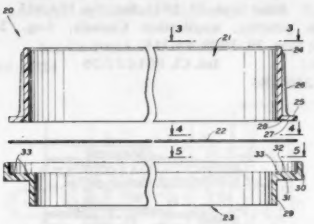
3,800,943

STACKABLE SIEVE

Laverne J. Riesbeck, 5257 Peninsula Dr., Canton, Ohio, and Willis A. Blackwell, 413 Linwood Ave., Canton, Ohio

Continuation-in-part of Ser. No. 844,768, July 25, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,254
Int. Cl. B07b *1/00*
U.S. Cl. 209—237 **6 Claims**

A sieve for use primarily in particle size analysis is made of a rigid plastic material. The sieve consists of a plastic frame injection molded in two parts with a screen mesh placed therebetween. The edge of one of the frame members is softened and the screen material is bonded thereto. The frame members are then bonded together with the screen



therebetween either by use of an epoxy compound or by means of conventional electro-sonic welding. Silicone rubber can be applied at the point where the screening material meets the plastic frame to insure against screen shearing at the junction points.

3,800,944

COALESCENCE OF WATER AND OLEOPHILIC LIQUID DISPERSIONS BY PASSAGE THROUGH A BED OF AN ION EXCHANGE RESIN

Marvin E. Yost, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 24, 1972, Ser. No. 256,299
Int. Cl. B01d *15/04, 17/04*
U.S. Cl. 210—23 **8 Claims**

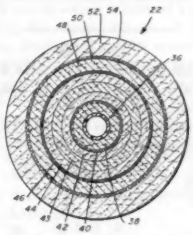
Dispersions of an oleophilic liquid and water are coalesced by passing through a bed of particles of an ion exchange resin which is equilibrated with respect to sorption of the oleophilic liquid.

3,800,945

CELL HAVING CATALYTIC ACTION FOR COALESCING OIL DROPLETS

Leslie L. Fowler, Tulsa, Okla., assignor to Cata-Sep, Inc., Tulsa, Okla.

Filed Nov. 26, 1971, Ser. No. 202,487
Int. Cl. B01d *27/02*
U.S. Cl. 210—73 **4 Claims**



A cell having catalytic action for coalescing oil droplets dispersed in a water emulsion including a perforated core into which the emulsion is injected, a layer of emulsion breaking fibrous material wound about the core through which the emulsion passes, and catalytic material in the form of small solid particles impregnated in the fibrous material. The invention also includes the method of coalescing oil droplets dispersed in a water emuslion including the steps of passing an emulsion through a fibrous material impregnated with small solid particles of catalytic material.

3,800,946

HYDROCYCLONES

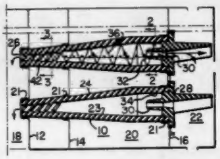
Charles M. Reid, and Bernard M. Ronellenfitch, both of Calgary, Alberta, Canada, assignors to Elast-O-Car Products & Engineering Limited, Calgary, Alberta, Canada

Filed Sept. 27, 1971, Ser. No. 184,055

Claims priority, application Canada, Aug. 20, 1971, 121,004; Sept. 28, 1970, 94,215

Int. Cl. B01d *21/26*

U.S. Cl. 210—84 1 Claim



A hydrocyclone has a generally conical chamber, a tangential inlet at the large end of said chamber and an axially aligned accept outlet located centrally of said large end. A reject passage is located at the apex end of said chamber the inwardly facing surface of said reject passage being provided with means defining a spiral shaped groove along and within which portions of the reject material may travel during passage through the reject outlet.

3,800,947

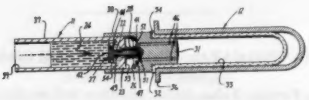
REAGENT TUBE AND CENTRIFUGALLY OPERATED SOLID-LIQUID SEPARATING DEVICE

Perry R. Smith, 6424 Benvenue Ave., Oakland, Calif.

Filed July 16, 1971, Ser. No. 163,398

Int. Cl. B01d *33/00*

U.S. Cl. 210—117 13 Claims



A reagent receptacle adapted for mounting in a centrifuge and having a discharge opening positioned for centrifugal discharge of matter therefrom; a filter mounted in the receptacle for filtering the matter discharged; and a normally closed centrifugal force responsive valve controlling flow through the opening.

3,800,948

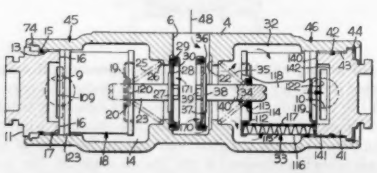
DUAL HYDRAULIC FILTER ARRANGEMENT

Raymond F. LaVallee, West Allis, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 191,718, Oct. 22, 1971, abandoned. This application July 26, 1973, Ser. No. 382,908

Int. Cl. B01d *27/08*

U.S. Cl. 210—136 10 Claims



A dual filter arrangement in a hydraulic system having means for selectively replacing the filter element while the system is in operation.

3,800,949

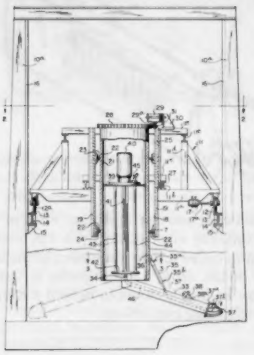
APPARATUS FOR DREDGING DIVIDED SOLIDS SUBMERGED IN LIQUID

Leonard A. Duval, 207 Harmon Rd., Aurora, Ohio

Filed Sept. 23, 1971, Ser. No. 183,034

Int. Cl. E03b *11/00*

U.S. Cl. 210—171 9 Claims



Apparatus is presented for removing finely divided solids collected in a sump or pit in association with water. A main frame supports the apparatus above the pit, a first guide means is supported in the frame for vertical reciprocation, a second guide means is supported within the first guide means for rotation therein about a vertical axis, a boom extends outwardly and downwardly from the lower end of the second guide means, tiltable about a horizontal pivot axis, and a dredging head at the outer end of the boom is adapted to reach various parts of the pit by manipulation of the apparatus. A pump is mounted inside of the second guide means with an intake line communicating to the dredge head so that the loosened solid material in somewhat of a slurry is enabled to be pumped out of the pit.

3,800,950

APPARATUS FOR REMOVING OIL FROM WATER

Howard V. Hess, and Edward L. Cole, both of P.O. Box 509, Fishkill, N.Y.

Continuation of Ser. No. 875,579, Nov. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 804,863, March 6, 1969, abandoned. This application Jan. 8, 1971, Ser. No. 105,074

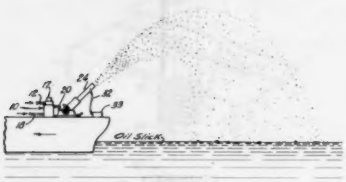
Int. Cl. E02b *15/04*

U.S. Cl. 210—242 3 Claims

Cleaning up hydrocarbon oil spills on a water surface which involves projecting open cellular particles of a highly oleophilic plastic foam such as polystyrene having a solvent affinity for petroleum substantially equivalent to that of polystyrene foam, to preferentially effect absorption of the oil and the agglomeration of the particles into lumps, mechanically recovering the lumps by screening and thereafter completely burning the oil saturated lumps to finally disposed thereof.

The apparatus for carrying out the method includes a heated foaming vessel supplied with foamable plastic particles and means for projecting the particles, after they have been foamed or expanded, upon oil floating on a water surface. These means include a barrel to which the foamed particles

are conveyed as well as propulsive means which disintegrate the foamed particles into relatively small particulates, which



are then cast onto the oil. Preferably the oil is surrounded by the foamed particles. The apparatus can be mounted on a barge or other vessel.

3,800,951

APPARATUS FOR REMOVING A SUBSTANCE FLOATING AS A LAYER ON THE SURFACE OF A BODY OF LIQUID

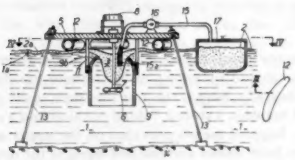
Jean-Claude Jacques Mourlon, Saint-Germain-en-Laye, and Ernest Marie Rene Dubois, Sceaux, both of France, assignors to Bertin & Cie, Plasier and Entreprise de Recherches et d'Activites Petrolieres-Elf, Paris, both of, France

Continuation of Ser. No. 887,297, Dec. 22, 1969, Pat. No. 3,635,342. This application Oct. 27, 1971, Ser. No. 192,845

Claims priority, application France, Dec. 23, 1968, 68.180117; Nov. 28, 1969, 69.41273. The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed.

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 **36 Claims**



An apparatus for removing from the surface of a body of liquid, an immiscible substance overfloating the same and spread thereover as a layer, said body of liquid and said layer of substance forming distinct horizontal strata, comprising:

means for locally whirling said liquid in the vicinity of said surface about a substantially vertical axis to generate a whirlpool producing in said surface a depression of downwardly tapering closed-bottom cup-shaped outline into which said immiscible overfloating substance is centripetally drawn from the environment of said depression and accumulates in extra thickness compared with said layer; and

means, distinct from said whirling means, for discriminatingly extracting from said depression the immiscible substance accumulated therein, said extracting means including a portion adapted to engage a region of said depression located above the bottom of said depression.

3,800,952

FILTER

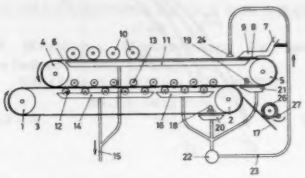
Wendel Bastgen, Betzdorf, Germany, assignor to Firma Alb. Klein K.-G., Niederfischbach, Germany

Filed May 15, 1972, Ser. No. 253,178

Claims priority, application Germany, June 5, 1971, 2127974

Int. Cl. B01d *33/04*; **B30b** *9/24*

U.S. Cl. 210—324 **13 Claims**



A filter consisting of two endless belts of filter material pressed together.

3,800,953

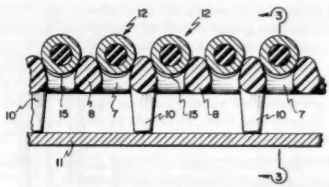
ROTARY DRUM VACUUM FILTER

Edward A. Huster, deceased, late of Salt Lake City, Utah (by Jeanne Peterson Huster, administratrix); Robert M. Janchus; Steven S. Davis, both of Bountiful; Kent L. Davis, and Ralph O. Hawkes, both of Salt Lake City, all of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed July 10, 1972, Ser. No. 270,496

Int. Cl. B01d *33/14*

U.S. Cl. 210—401 **2 Claims**



The sidewall of a rotary filter drum is provided with raised, perforate decking across which is formed a plurality of parallel grooves encircling the drum. Loops of filter medium are trained about the drum and rollers spaced therefrom. The loops are in a single layer and seat in the grooves to thereby be maintained in parallel, spaced-apart relationship. Division strips are provided longitudinally across the drum between sections of the decking to seal against the loops of filter medium between said sections. A circumferential seal is provided about the drum ends to stop leakage from the edges of the decking section while allowing expansion of the decking. An adjustable device is provided for tensioning the loops and for discharging cake therefrom.

3,800,954

COFFEE FILTER AND METHOD OF MAKING SAME

Harold Lampcov, Oak Park, Mich., assignor to Star Filter Company, Livonia, Mich.

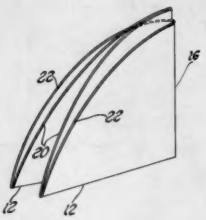
Filed May 3, 1972, Ser. No. 249,993

Int. Cl. B01j *23/28*

U.S. Cl. 210—497 **8 Claims**

A filter for brewing coffee or the like is formed of a sheet of paper folded along a line parallel to and slightly displaced from one axis of the sheet to form two sections, one larger than the other and then refolded about an axis transverse to

the first axis to form four layers with the two sides of the larger segment abutting one another and sandwiched between the folded sides of the smaller segment. The filter may be easily opened by grasping an outer sheet and the remaining three sheets at their extending edge. The filter is made from an elongated web of filter paper by first trimming the edges of the web



in a regular pattern which is not symmetrical with respect to the center line of the web, next folding along the longitudinal center line, then refolding the folded web along a plurality of regularly spaced lines transverse to the longitudinal center line and then cutting the folded stacked sections along a line parallel to and intermediate the folded edges.

3,800,955

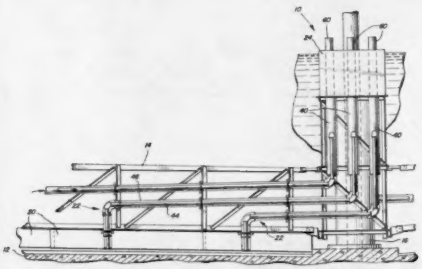
SLUDGE REMOVAL MECHANISM

Philip Edgerton, Holicong, and John Lodholz, Perkasie, both of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed May 25, 1973, Ser. No. 364,127

Int. Cl. B01d *12/00*

U.S. Cl. 210—528 **14 Claims**



A sludge removal mechanism is disclosed for withdrawing sludge that has settled to the bottom of a tank. The mechanism includes a concentrating means for concentrating the settled sludge in a localized area on the tank bottom and conduit means including at least two conduits leading from one localized area to a collection zone with selection means cooperating with the conduits to selectively connect any one or all of the conduits to the collection zone to vary the range of flow from the localized area to the collection zone.

3,800,956

VESSEL FOR CHEMICAL ACTION

Hideyuki Nishizawa, No. 68, Nakazato-machi, Kita-ku, Tokyo-to, Japan

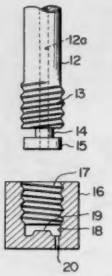
Filed July 2, 1971, Ser. No. 159,435

Claims priority, application Japan, Nov. 2, 1970, 45-09153; July 10, 1970, 45-688927

Int. Cl. B01d *15/08*

U.S. Cl. 210—533 **1 Claim**

A vessel particularly suitable for effecting separation of the components of a multi-component liquid mixture in chromatographic or centrifugal separation processes that is utilized in the manufacture of chemical substances, chemical analysis and various scientific experiments. Each of the two embodiments provide a vessel having valve means on the bottom of the vessel to effect a fine control of the liquid flow therefrom.



3,800,957

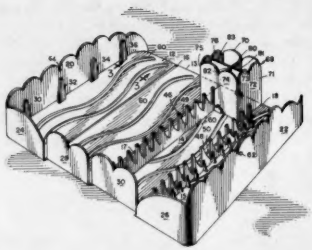
COMBINATION DISH RACK AND TRAY

Arthur A. Krause, Hollywood, Calif., assignor to K-Tel International Inc., Minneapolis, Minn.

Filed Aug. 21, 1972, Ser. No. 282,285

Int. Cl. A47b *81/04*

U.S. Cl. 211—41 **12 Claims**



A storable combination dish rack and tray made unitarily from plastic and including at least three panels (preferably four) integrally hinged to one another, said panels being movable between a stored, folded position and a use, unfolded position. Support means provided on the upper surface of the panels to hold dishes and the like upright for drying are constructed and arranged so that they will not interfere with folding and storage of the dish rack and tray.

3,800,958

BOOKRACK

Edward G. Dorn, 145 S. Belle Ave., Palatine, Ill.

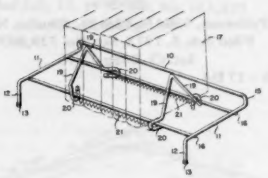
Filed Aug. 11, 1972, Ser. No. 279,829

Int. Cl. A47f *7/14*

U.S. Cl. 211—43 **5 Claims**

A bookrack comprising an open framework of metal wire elements includes spaced, parallel rails constituting an inclined floor for supporting a series of books in a position inclined from the vertical, so that their titles may be viewed easily from levels above the horizontal surface of a table top, desk, or other support on which the rack may be seated. Bookends connected by retracting springs are detachably mounted on the floor rails for slidable movement thereon longitudinally of the rack. An element constituting one longitu-

dinal side bar of the rack frame is arranged to provide a stop engageable by books positioned between the bookends to hold



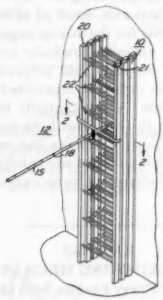
the books in positions in which no part of any of the books is in contact with the horizontal surface of a support on which the rack may be seated.

3,800,959

LADDER HOLDER

Harry S. Finocchiaro, Box 343, Monroeville Rd., Swedesboro, and James Tyo, Westville, both of N.J., assignors to said Finocchiaro, by said Tyo

Filed July 17, 1972, Ser. No. 272,414
Int. Cl. A47f *5/08*, *7/00*
U.S. Cl. 211—89 7 Claims



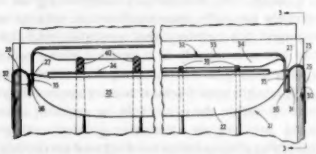
A ladder holder for securing with respect to a wall at least one ladder in which at least one elongated member is pivotally coupled to the wall. Slideably secured to the elongated member is a "U"-shaped assembly for embracing the rails of the ladder. The movement of the embracing assembly is restrained with respect to the elongated member in order to secure the ladder and prevent it from being removed.

3,800,960

HANGER SUPPORT

Herbert S. Collin, 56 Bristol St., Boston, Mass.

Filed May 30, 1972, Ser. No. 257,615
Int. Cl. A47f *7/19*
U.S. Cl. 211—124 8 Claims



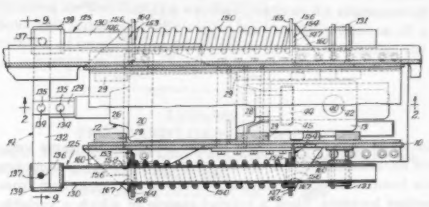
The bar for supporting clothes hangers in an upright garment shipping carton. A channel shaped metal bar for supporting the hanger has a central hanger supporting portion and end portions that engage the carton walls. Strength and compactness is provided by forming the central supporting portion as a downwardly opened U-shaped elongated channel. A cover section overlies the body section and is adaptedly engagable for clothes hangers of different dimensions at end flaps that adjustably engage lips formed in the end portions of the body section.

3,800,961

END OF CAR CUSHIONING DEVICE FOR A RAILWAY CAR

Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,786
Int. Cl. B61g *9/12*
U.S. Cl. 213—8 28 Claims



An end of car hydraulic cushioning device has been provided for a type of railway car usually situated at the rear of a train. The device comprises a cylinder, a piston slidable in the cylinder, a yoke adapted to carry a coupler, and a return spring assembly for returning the piston to a neutral position in the cylinder. To cushion the forces acting on such a car, the device has a travel in a draft direction at least equal to its travel in the buff direction. The device also has draft and buff orifices in the cylinder for providing fluid flow therefrom and also has neutral orifices in the cylinder for returning fluid to the cylinder. The area of the draft, buff and neutral orifices are proportioned to cushion impact forces acting on such a car. The return spring assembly includes a coil spring which cooperates with a pair of brackets on the railway car and a pair of abutments movable with the piston to return the piston to its neutral position where it covers the neutral orifices.

3,800,962

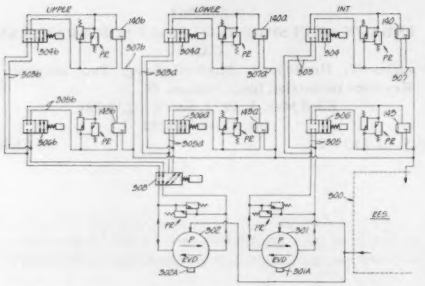
ELECTROHYDRAULIC CONTROL SYSTEM

John E. Ham, Long Beach, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.

Division of Ser. No. 779,171, Nov. 26, 1968, Pat. No. 3,615,027. This application Feb. 4, 1971, Ser. No. 112,540. The portion of the term of this patent subsequent to June 2, 1987, has been disclaimed.
Int. Cl. E21b *19/00*
U.S. Cl. 214—2.5 1 Claim

Control and operating systems for well pipe racking apparatus in which a number of vertically spaced racker arms are moved longitudinally to extend and retract the racker arms, as well as laterally relative to the pipe racking finger board, the racker arms having pipe supporting means for moving a length of pipe between the racking finger board and a position disposed over the rotary table of a drilling rig, and in which the control and operating systems include a hydraulic operating system comprising a reversible variable displacement pump for supplying fluid at a selected rate to either of a pair of motors, one of which effects longitudinal movement of one of the racker arms and the other of which effects lateral

movement of said one of the racker arms. Such control and operating systems in which a second reversible variable displacement pump is employed to selectively supply fluid to either of a pair of motors for effecting longitudinal movement and lateral movement of the rest of the racker arms. Such control and operating systems in which the control system includes selectively operable control circuits for enabling actuation of an upper and a lower racker arm from the same location or, alternatively, to enable operation of the lower racker arm from said location and operation of the upper arm from another location. Such a control system in which a variable displacement pump is adjusted and caused to operate in reversed directions to displace fluid to the racker arm operating motors at a rate proportional to the extent of movement of a control member.

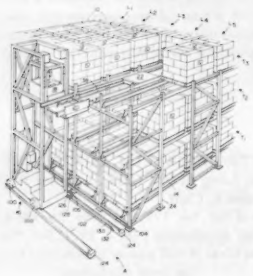


3,800,963

MATERIAL STORAGE AND HANDLING SYSTEM

Edward T. Holland, P.O. Box 1446, Lancaster, Pa.

Filed Dec. 4, 1972, Ser. No. 311,757
Int. Cl. B65g *1/04*
U.S. Cl. 214—16.4 A **14 Claims**



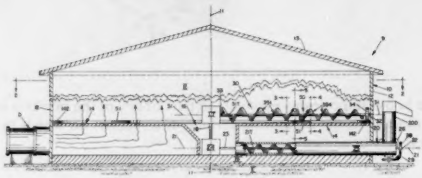
A transportation system for load-carrying pallets which are stored in multiple-tier, multiple-lane storage racks. The system includes a host vehicle, which is a specially designed stacker crane that operates along an aisle adjacent the work faces of the racks. The host vehicle has a vertical elevator that carries a pallet transporting carrier which is used to deposit, move or retrieve a pallet from any storage lane or tier in the rack. The carrier is powered and remotely controlled by the operator of the host vehicle through a control-power belt interconnecting the host vehicle and the carrier. With the system, a single host machine and a single pallet carrier can service the entire storage area from a single aisle.

3,800,964

TRACTION ARRANGEMENT FOR ANGULARLY ROTATABLE SWEEP AUGER OF CIRCULATOR GRAIN BINS

William C. Patterson, 9364 N. 45th St., Omaha, Nebr.

Filed Feb. 5, 1973, Ser. No. 329,303
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA **8 Claims**



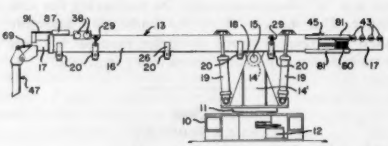
Circulator grain bins commonly comprise upright sidewall means customarily circularly surrounding the bin vertical-axis and also a substantially horizontal floor for supporting a lofty depth of grain thereupon; there is a substantially horizontal elongate sweep auger located immediately above the floor and henced submerged at the bottom of the grain pile, the sweep auger radiating lengthily outwardly from and angularly rotatable about the bin vertical-axis. Each of at least two consecutive medial helical flights for the sweep auger is provided with separate distinct cogs extending radially externally from the flighting helical edge whereby said arrayed distinct cogs at their curved free-edges define a segmented spiroid rim submerged within the grain. A substantially horizontal annular roadway located along the bin floor between the bin sidewall and vertical-axis abuttably underlies the submerged spiroid rim whereby angular rotatation of the axially revolving sweep auger is enhanced and improved to an unusually reliable condition.

3,800,965

LADLE SKIMMING MECHANISM

George E. Barron, and Harry Pavone, both of Verona, Pa.

Filed Jan. 11, 1972, Ser. No. 216,997
Int. Cl. B66c *23/04, 23/06*
U.S. Cl. 214—32 **2 Claims**



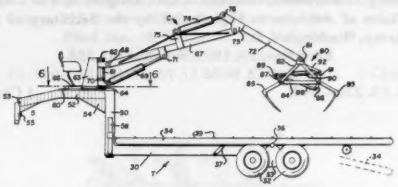
The specification discloses a skimming mechanism used in steel mills for removing slag from the surface of the molten metal in a ladle, the mechanism comprising an extensible boom assembly pivotally mounted on a turntable and power means arranged for rotating the turntable and for pivotally moving the boom assembly in a vertical plane relative to the turntable. The boom assembly comprises telescoping tubular sections, adjustable anti-friction means supporting the inner tubular section within the outer tubular section, a power-actuated driving mechanism comprising cooperating sprocket wheels and roller chains for extending and retracting the inner boom section with respect to the outer boom section, and a skimming paddle comprising a scoop portion separably attached to a mounting bracket portion that is mounted on the outer end of the inner boom section.

3,800,966

LOADER CRANE FOR GOOSENECK TRAILER

Gary Newton, General Delivery, Eckley, Colo.

Filed July 12, 1971, Ser. No. 161,837
Int. Cl. B65g *1/48*
U.S. Cl. 214—77 R 3 Claims



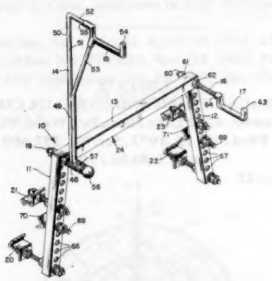
The present invention incorporates a loader crane with a gooseneck type trailer. The trailer is modified by adding a deck upon the gooseneck structure. The loader frame is mounted upon this deck to permit the boom and arm thereof to extend and swing over the bed of the trailer. The crane is hydraulically operated. Hydraulic controls for its operation are mounted upon the deck; an operator's chair is also mounted upon the deck.

3,800,967

WHEELCHAIR CARRIER ATTACHABLE TO VEHICLE

Irving W. Kosecoff, 3201 Butler Ave., Los Angeles, Calif.

Filed Sept. 15, 1972, Ser. No. 289,584
Int. Cl. B60m *9/00*
U.S. Cl. 214—450 9 Claims



A wheelchair carrier has a generally U-shaped frame work constituted by a pair of upright struts whose upper ends are coupled to a relatively low-slung cross brace. Projecting rearwardly is a swing arm pivotally coupled to one side of the frame work and a holding arm fixed to the other side of the frame work.

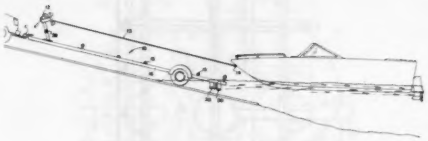
With the swing arm rotated out of the way to a retracted position, a wheelchair may be assembled onto the carrier by first looping or placing a front corner section of the wheelchair over the holding arm and using it as a pivot to swing the wheelchair upwardly with a lifting action. Once the wheelchair is urged to the desired position, then the swing arm is rotated back to underlie and support the wheelchair handle grips or back rest section. The swing arm may be set in place by a detent and locking knob arrangement.

3,800,968

WATER REACTING MEANS FACILITATING LOADING OF BOAT TRAILERS

Harold A. Thompson, Box 70, Lakeside, Oreg.

Filed Aug. 3, 1972, Ser. No. 277,619
Int. Cl. B60p *3/10*
U.S. Cl. 214—500 4 Claims



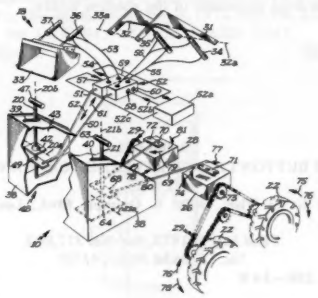
Water reacting means in place on a small boat trailer generating a water flow rearwardly therefrom for alignment of a boat hull tethered to the trailer against the influence of a crosswind or crosscurrent which otherwise would misalign the boat to hamper boat launching and retrieving operations.

3,800,969

FRONT END LOADER VEHICLE

Douglas W. Steiger, Red Lake Falls, Minn., assignor to Hydra-Mac, Inc., Red Lake Falls, Minn.

Filed Jan. 3, 1972, Ser. No. 214,659
Int. Cl. E02f *3/00*
U.S. Cl. 214—778 4 Claims



A front end loader vehicle with an improved control center for actuating a pair of power actuated vertically swinging arms with a power actuated scoop at the ends of the arms and for steeringly propelling the vehicle. The control center permits an operator to completely control his vehicle with a pair of dual function control shafts using only his hands.

3,800,970

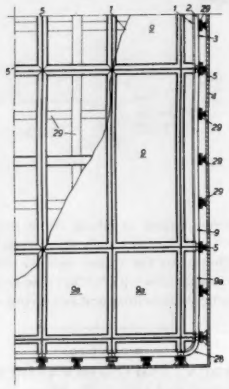
INTEGRATED TANK CONTAINERS FOR THE BULK STORAGE OF LIQUIDS

Robert G. Jackson, Hornchurch, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed Mar. 8, 1971, Ser. No. 121,976
Claims priority, application Great Britain, Mar. 19, 1970, 13247/70
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG 3 Claims

An integrated membrane-type tank container for cryogenic liquids, supported within a rigid outer shell, is made up of a multiplicity of panels in the form of shallow boxes of thin, flexible metal sheet material filled with load-bearing insulation, and sealingly connected together by edge extensions of their front and back faces respectively to provide inner and outer

impervious membrane walls, which walls are attached to a support framework carried by the rigid outer shell. The edge extensions of adjacent panels are welded together through metal strips folded to provide expansion joints and the shallow



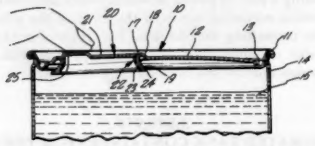
boxes are attached to the framework through these strips. The framework is provided with brackets for adjusting the spacing of individual frame members from the outer rigid shell to facilitate even alignment of the shallow boxes.

3,800,971

PUSH BUTTON LID FOR BEVERAGE CANS AND THE LIKE

Edward G. La Vista, 3000 E. Olympic Blvd., Los Angeles, Calif.

Filed July 9, 1973, Ser. No. 377,802
Int. Cl. B65d *39/00, 41/00*
U.S. Cl. 220—24 R **9 Claims**



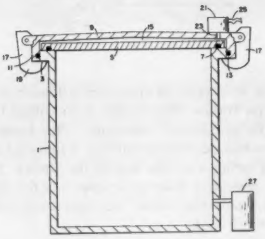
A lid for beverage cans and the like is provided with a circular opening, the opening being formed so as to have an inwardly extending tapered peripheral wall, the innermost edge of which may be flared laterally to form a skirt. The diameter of the opening is less at the outermost than at the innermost edge of the wall. A similarly tapered plug is fitted tightly, from inward to outward in this opening, and may have an enlarged skirt portion which engages the skirt of the opening in a sealing relationship. The plug, therefore, has a maximum diameter which is greater than the diameter of the opening. The outer part of the plug has a raised table portion along part of its circumference to create leverage when the plug is dislodged by pushing inwardly on the table portion.

3,800,972

TRAPPED ATMOSPHERE CLOSURE ASSEMBLY

Rodney L. Raymond, Gardena, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,358
Int. Cl. B65d *51/16, 51/18*
U.S. Cl. 220—44 R **1 Claim**



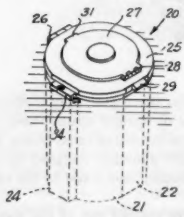
An assembly for trapping air, nitrogen or other gas under atmospheric pressure to create a sealing pressure on a lid of a vacuum chamber carried by a missile. The gas is trapped between the lid and a cover secured to the vacuum chamber by latch means. When the designated space environment is reached a valve is energized to release the sealing pressure and equalize the pressures on opposite sides of the cover for easy opening of the latches.

3,800,973

UNDERGROUND TRASH AND GARBAGE CONTAINER

Hardy O. Weaver, 4222 Lake Shore Dr., Waco, Tex.

Filed Feb. 15, 1973, Ser. No. 332,609
Int. Cl. B65d *25/00*
U.S. Cl. 220—17 **5 Claims**



An underground trash and garbage can container for maintaining a receptacle below ground level and for raising it above the ground for emptying. A spring actuated lifting platform supports the garbage or trash receptacle and raises it

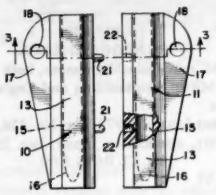
when released by foot pressure on a cam latch. The receptacle is lowered by forcing it down against spring pressure, winding the spring as it moves downwardly into the ground.

3,800,974

SECTIONAL EXPANDABLE PENCIL HOLDER

Ralph E. Mogel, Rt. 1, Box 260A, Jackson, Miss., and William J. Coury, 225 Mcdowell Rd., B-1, Florence, Miss.

Filed Jan. 10, 1972, Ser. No. 216,460
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 2 Claims



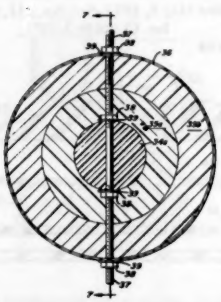
A holder for pencils, pens or other slender articles consists of a plurality of holder modules or sections adapted to be releasably connected into a unit which possesses any number of the modules. The unit is mountable upon a wall, desk, machine or the like to satisfy the convenience of the user.

3,800,975

FLEXIBLE SEAL FOR A VAPOR CAVITY

Martin A. Nishkian, Long Beach, and Wayne E. Nuttall, San Gabriel, both of Calif., assignors to United States Steel Corporation

Division of Ser. No. 134,934, April 19, 1971, which is a division of Ser. No. 879,022, Nov. 24, 1969, Pat. No. 3,618,813. This application Feb. 14, 1973, Ser. No. 332,528
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 S 25 Claims



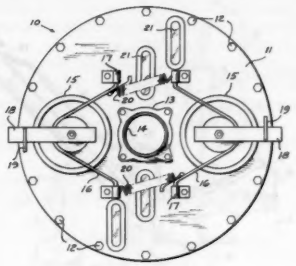
A seal is disclosed for a tank having a floating roof wherein a mounting member is pivoted on the floating roof and a sealing member is carried by the free end of the mounting member for sealing a vapor cavity between the floating roof and the tank.

3,800,976

CONVERTING A CEMENT MIXER TO A SAND PUMPING TRUCK A CLOSURER PLATE

Bill Bohannon, 8905 Fredric Ave., Sacramento, Calif.

Filed Aug. 10, 1972, Ser. No. 279,721
Int. Cl. B65d *43/16, 51/10*
U.S. Cl. 220—31 R 1 Claim



A plate-mounted assembly containing a suction connection, unloading hatches and level inspection windows, converts a cement mixer truck to a sand pumper truck.

3,800,977

BIO-DEGRADABLE CONTAINER

Francis W. Stager, and Robert N. Minor, both of Stafford Springs, Conn., assignors to Biocor Corporation, Stafford Springs, Conn.

Continuation-in-part of Ser. No. 42,010, June 1, 1970, Pat. No. 3,647,111. This application Mar. 6, 1972, Ser. No. 232,200
Int. Cl. B65d *25/34, 25/14;* B32b *27/42*
U.S. Cl. 220—83 20 Claims

A container which deteriorates after a prolonged exposure to moisture and oxygen in an atmospheric environment with the aid of biological agents. The container material is formed in a laminated configuration and has organic components that ate nutrients to fungi and various bacteria which brings about the decomposition. The material is composed of an organic filler material, such as peat, and a phenolic resin impregnated with a metallic salt of a fatty acid. The decomposition process transforms the container material into a rich organic substance which enhances soil characteristics.

3,800,978

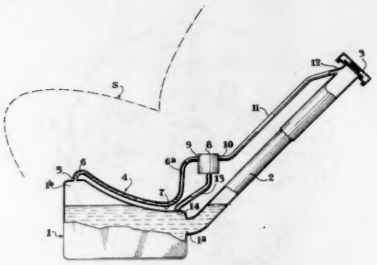
LIQUID TANK PROVIDED WITH DE-GASING MEANS

Jacques Sigwald, Taverny, France, assignor to Automobiles Peugot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of, France

Filed Sept. 29, 1972, Ser. No. 293,564
Claims priority, application France, Dec. 13, 1971, 71.44663
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 R 4 Claims

Liquid tank structure in which the filling piping connected to the bottom part of the tank is connected to the top part of

the tank by a venting pipe having an upper portion, a lower portion constituting a liquid trap and a generally upwardly extending portion. A chamber is inserted in the upwardly extending portion of the venting pipe and a conduit including a constricted passage connects the lower part of the chamber to



the tank. The volume of the part of the chamber below the points of connection of the chamber to the upwardly extending portion of the venting pipe is equal to at least the volume of the lower portion of the venting pipe which constitutes the trap.

3,800,979

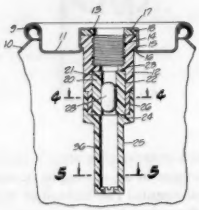
LPG VALVE ASSEMBLY

Rodney S. Piffath, Northridge, and John J. Cole, Beverly Hills, both of Calif., assignors to International Fire Tool Corporation, New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 214,996

Int. Cl. B65d *25/00, 7/24, 51/16*

U.S. Cl. 220—89 A **7 Claims**



A conventional pressure can has a top end wall with a central aperture and a stationary tubular body fixed to the end wall and projecting axially into the interior of the can. A central threaded opening in the body communicates with the aperture and with the bore of an axial elastomeric sleeve fixed within the body. A metallic piston of cylindrical shape and rounded ends is received within the bore of the elastomeric sleeve between the ends thereof and the diameter of the cylindrical piston is greater than the normal free diameter of the bore, so that the piston prevents escape of LPG fuel from the can under normal pressure conditions but blows out through the body opening and can top aperture in the event of buildup of excessive pressure within the can due to heat. An outlet unit having external threads engaging internal threads within the body is insertable through the cap top aperture, and this outlet unit carries an axially extending projection capable of axially displacing the piston from the bore of the elastomeric sleeve into a stationary retainer tube on the body. The projection seals within the bore of the elastomeric sleeve and has a flow control side port communicating with a central axial discharge passage so that turning movement of the outlet unit relative to the can and body may expose the port below the lower end of the elastomeric sleeve in a controlled manner to regulate the flow rate through the discharge passage. Upon axial removal of the outlet unit from the body, the piston is seated by gas pressure against the lower end of the elastomeric sleeve to act as a check valve preventing escape of gas from the can. A hollow refill probe may be axially inserted through the can top aperture and body opening to displace the piston from sealing position to refill the can to the desired level, and upon removal of the probe the piston is returned by gas pressure to seal against the lower end of the elastomeric sleeve.

3,800,980

PIPE STORING RACK

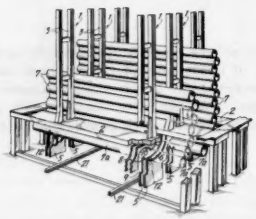
Tetsuo Takeuchi, and Tadashi Orimoto, both of Chiba, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,256

Claims priority, application Japan, Jan. 25, 1972, 47-9382

Int. Cl. B65h *3/00*

U.S. Cl. 221—195 **5 Claims**



A pipe storing rack characterized in that pipe take-out passage is provided in the lower part of the rack in continuation to the vertical pipe storing passages, a pipe stopping projection is provided halfway in said pipe take-out passage, and a lift means adapted to push up a lowermost pipe held by said projection and force out said pipe under the weight of the succeeding pipes is also provided in said pipe take-out passage.

3,800,981

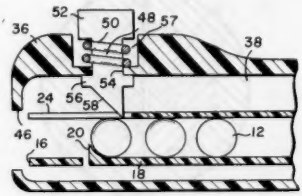
CARTRIDGE LOADING GOLF TEE DISPENSER

Henry O. Zeller, 2083 Five Mile Line Rd., Penfield, N.Y.

Filed May 8, 1972, Ser. No. 251,192

Int. Cl. B65h *3/56*

U.S. Cl. 221—198 **1 Claim**



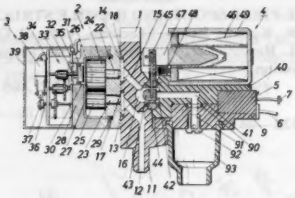
A cartridge loading golf tee dispenser in which a row of golf tees are preferably arranged in alternate side-by-side relation within a cartridge. The golf tees may be manually dispensed from the cartridge, or the cartridge loaded in a dispenser which is provided with a manually actuatable dispensing device adapted when actuated to engage and force the leading golf tee past a retaining member and out of the dispenser.

3,800,982

METERED LIQUID DISPENSER

Ichizo Yamamoto, and Hiroshi Fujii, both of Tokyo, Japan, assignors to Oval Kiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,072
Claims priority, application Japan, June 20, 1972, 47-60952
Int. Cl. B67d 5/30
U.S. Cl. 222—20 7 Claims



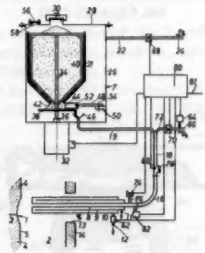
A liquid distributor adapted in an automatic selling machine, comprises a vertical wall on which a plurality of units are fixed. Each of units has a positive displacement flow meter, an automatic valve and other means necessary for supplying, exhausting and mixing such several kinds of liquid as to drink which is discharged from a single nozzle to be sold by the glass or cup, of which amount and mixed ratio of liquid is exactly measured by the flow meter automatically and supplied very sanitarily.

3,800,983

APPARATUS FOR FORMING REFRACTORY MASSES

Edgar Brichard, Ransart; Maurice Jaupain, Jumet; Emile Plumat, Gilly, and Pierre Deschepper, Marcinelle, all of Belgium, assignors to Glaverbel S.A., Brussels, Belgium

Division of Ser. No. 86,532, Nov. 3, 1970, Pat. No. 3,684,560.
This application June 5, 1972, Ser. No. 259,991
Claims priority, application Luxembourg, Nov. 4, 1969, 59745
Int. Cl. B67d 5/32
U.S. Cl. 222—52 12 Claims



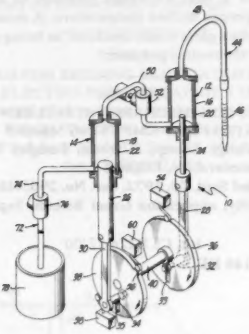
Apparatus for forming refractory masses, in situ, at selected surface locations by applying to such location a mixture of fine particles of a substance which is capable of undergoing combustion to produce heat and particles of another substance, the substances being of such composition that such heat will melt at least the surfaces of the particles of the other substance, and creating the conditions for producing such combustion.

3,800,984

SAMPLER AND DILUTER

Charles Stephens Phelan, Tustin, Calif., assignor to Rohe' Scientific Corporation, Santa Ana, Calif.

Filed Nov. 26, 1971, Ser. No. 202,370
Int. Cl. B67d 5/52
U.S. Cl. 23—259 6 Claims



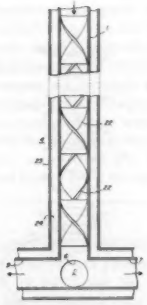
An automatic apparatus for discharging metered volumes of a sample and a diluent. The apparatus includes a positive displacement sample pump for drawing a metered sample into a sample inlet and includes a positive displacement diluent pump for simultaneously drawing a metered volume of diluent into a diluent inlet. Subsequently, the two pumps simultaneously discharge the metered sample and the metered volume of diluent from the sample inlet. The diluent inlet, the two pumps and the sample inlet are connected in series in such a way that there is through flow of the diluent from the diluent inlet to the sample inlet without any dead ends. With this construction, the apparatus constantly purges itself of air to avoid air accumulations which might lead to inaccuracies in metering the sample and/or the diluent.

3,800,985

SYSTEM AND METHOD FOR DISTRIBUTING HIGHLY VISCOUS MOLTEN MATERIAL

Kenneth M. Grout, Topsfield, and Richard D. Devellian, Rockport, both of Mass., assignors to Kenics Corporation, Danvers, Mass.

Filed Apr. 15, 1971, Ser. No. 134,317
Int. Cl. B29f 3/02, 3/08
U.S. Cl. 222—146 H 3 Claims



A system for distributing a highly viscous molten material such as a molten polymer. The system includes means for heating the material to a molten state and moving it through a special mixing structure located just ahead of one or more out-

put ports leading to a further processing system including a filament spinnerette. The mixing structure includes a conduit containing a plurality of sheet-like elements extending longitudinally within the conduit, each element being curved to turn the direction of the material flowing past it. The elements are arranged in alternating right and left-handed curvature groups (a group consisting of one or more elements). The conduit is in contact with a heat exchange medium to maintain the polymer at its proper molten temperature. A modification for distributing molten glass is also disclosed as being substantially the same as for the molten polymer.

3,800,986

APPARATUS FOR DISCHARGING MOLTEN METALS WITH PUMP EMPTYING MEANS

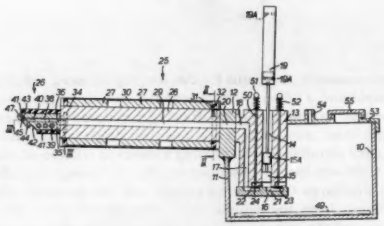
Thomas Blackledge Stamp, Silvretta, Langley Rd., Winchcombe, Gloucestershire, England

Filed Sept. 20, 1972, Ser. No. 290,748

Claims priority, application Great Britain, Sept. 24, 1971, 44543/71

Int. Cl. B22d *37/00*

U.S. Cl. 222—146 HE **14 Claims**



Apparatus for discharging molten metal, such as lead, has a pump demountable from a support member attached to a melting pot, the pump, support member and a ducted block, also mounted on the support member, having cooperating upwardly inclined passages for the flow of the molten metal and terminating in a discharge opening or nozzle. The ducted block and nozzle (where present) are provided with auxiliary heating.

3,800,987

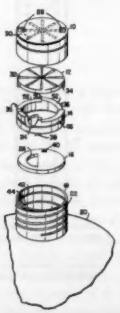
AUTOMATIC DISPENSER CLOSURE

Charles E. Kemp, San Leandro, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed July 16, 1971, Ser. No. 163,392

Int. Cl. B65d *55/12*

U.S. Cl. 222—153 **4 Claims**



A child-resistant dispenser closure is provided which automatically closes off access to a container incident to the normal replacement of a threaded cap closure. The closure comprises a clutch mechanism in the cap closure which operates to rotatably close a valve mechanism within the neck of the dispenser container. A plurality of projections on the top of the dispenser cap are inserted into mating recesses in the valve mechanism after the cap has been removed from the dispenser neck in order to facilitate rotative opening of the valve mechanism.

3,800,988

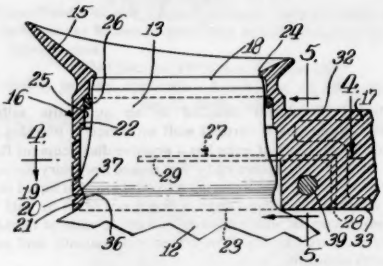
ONE-PIECE SPOUT AND HANDLE STRUCTURE

Harvey R. Karlen; Ralph Eberstein, both of Chicago, and Franz L. Herbsthofer, Wilmette, all of Ill., assignors to Cory Corporation

Filed June 17, 1968, Ser. No. 737,405

Int. Cl. A47g *19/14*

U.S. Cl. 222—465 **17 Claims**



A decanter for dispensing a liquid, such as coffee, having a unitary spout and handle element mechanically interlocked to the neck of the decanter flask. The spout and handle element is secured by mechanical means constricting a portion thereof about the decanter neck and effecting a mechanical interlock of a portion of the spout and handle means with a cooperating portion of the decanter neck.

3,800,989

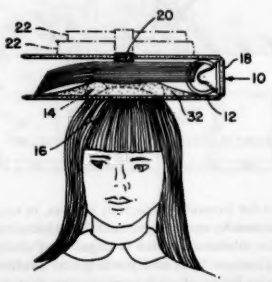
HEAD LOAD BALANCER FOR BOOKBINDERS AND OTHER OBJECTS

John E. Kallander, 1732 Stowe Ave., Walnut Creek, Calif.

Division of Ser. No. 155,425, June 22, 1971, Pat. No. 3,722,764, which is a continuation-in-part of Ser. No. 1,704, Jan. 9, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,574

Int. Cl. A45f *3/00*

U.S. Cl. 224—5 R **9 Claims**



A head load balancer especially for book binders to be worn on the top of the head and including a load support having

head engaging means automatically conforming fairly rigidly to the shape of the top of the wearer's head without any mechanical internal mechanism adjustment. The head engaging means comprises a plurality of circumferentially spaced elements engageable with the top of the wearer's head at circumferentially spaced points pivotally moveable independently of each other and yet flexibly interconnected and having substantial relative movement to each other so as to automatically conform to the wearer's head.

3,800,990

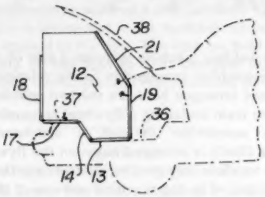
COLLAPSIBLE CONTAINER FOR AUTO TRUNK

William B. Richardson, 3502 Bryant Ave., Palo Alto, Calif.

Filed Jan. 17, 1972, Ser. No. 218,203

Int. Cl. B60r *5/04*

U.S. Cl. 224—42.42 R **3 Claims**



A container which fits into an auto trunk to transport garden trash and other materials consists of interfitting parts which can be disassembled after use for compact storage. Two vertical, irregularly shaped sides are supported by six transverse members. Two of the transverse members are hinged together, one fitting on the bottom of the trunk, the other slanting upwardly-rearwardly to the level of the bottom edge of the trunk opening, the hinged connection permitting conforming to the varying dimensions of trunks of different makes and models of cars. A horizontal rear bottom is located rearward of the two hinged members and the three last-named transverse members are provided with spaced guides which receive the edges of the sides. A vertical back is positioned rearward of the rear bottom; a vertical front forward of the forward hinged member. A slanted back slopes upward-rearward from the top edge of the vertical back. The various members hook together and are braced to keep the parts in proper position.

3,800,991

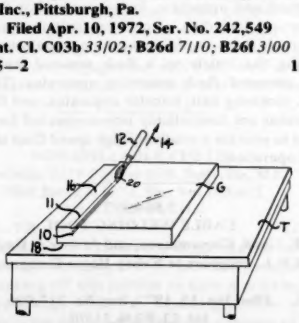
METHOD OF AND AN APPARATUS FOR CUTTING GLASS

Robert H. Grove, Sarver; Robert P. De Torre, Pittsburgh, and John R. Dahlberg, Jeannette, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 10, 1972, Ser. No. 242,549

Int. Cl. C03b *33/02*; **B26d** *7/10*; **B26f** *3/00*

U.S. Cl. 225—2 **15 Claims**



Pieces of flat glass are cut to desired size without the necessity of grinding to size and polishing. Trims are removed from the piece in accordance with a procedure involving the creation of a subsurface discontinuity along an intended path of cut, followed by the application of surface heat along the discontinuity to increase tensile stresses within the piece along the intended path of cut. A bending moment is applied about the intended path of cut to propagate a fracture in the piece of glass. Light seaming of the top and bottom portions of the edges completes the preparation of the edges.

3,800,992

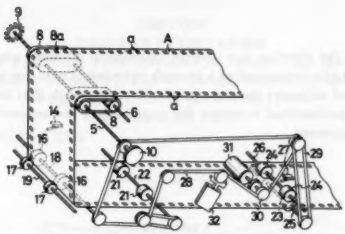
APPARATUS FOR FEEDING ELONGATED DOCUMENT TO ELECTRO-PHOTOGRAPHIC COPIER

Seiichi Yamagishi, Tokyo, Japan, assignor to Minolta Camera Kabushiki Kaisha, Higashiku, Osaka, Japan

Filed June 27, 1973, Ser. No. 374,168

Int. Cl. B65h *25/00*

U.S. Cl. 226—11 **3 Claims**



An apparatus comprising a document guide portion for receiving the document face up while permitting the operator to read the document therethrough, first drive means for forcibly driving the document received therein, a document reversing guide formed with a document passage by which the document driven by the drive means is turned face down at one end of the document table, second drive means disposed at the outlet of the document passage and including driven rollers rollingly engageable with the document under the torque thereof due to gravity to drive the document onto a document table glass at a higher circumferential speed than the first drive means, third drive means rollingly engageable with the document under gravity and to be driven at a higher circumferential speed than the second drive means, and fourth drive means disposed at the terminal end of the document table glass and including driven rollers rollingly engageable with the document under gravity, the fourth drive means being drivable at a higher circumferential speed than the third drive means only in the normal direction and idly rotatable in the reverse direction. With timing controlled by an electromagnetic mechanism, the driven rollers of the second drive means and the third drive means are rollingly engageable with elements to be thereby engaged. Thus they come into rolling contact with the elements under gravity when the document has reached the interior of the document reversing guide and are supported at positions away from the document upon the document reaching the fourth drive means.

3,800,993

CAPSTAN TENSIONER

John F. Stephens, 3513 Pacific Ave., Burbank, Calif.

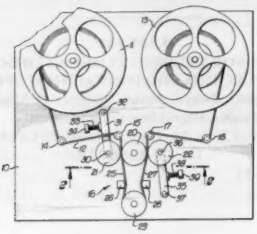
Filed Feb. 18, 1971, Ser. No. 116,453

Int. Cl. B65h *17/22*

U.S. Cl. 226—187 **4 Claims**

A differential tape drive capstan having a multiple number of annular alternating rounded depressions and ridges of equal width extend throughout the length of a power-driven cylindrical element. On a parallel axis at one side of the capstan is a

cylindrical element having complementary rounded ridges and depressions meshing with respective depressions and ridges of the capstan and between which passes a relatively wide sound tape, pressed into the form of the ridges and depressions during its travel therebetween. On the opposite



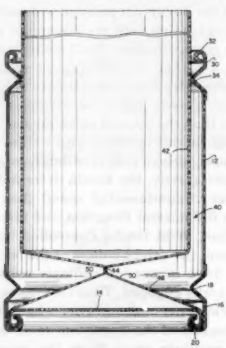
side of the capstan is a second cylindrical element also on a parallel axis possessed of a smooth cylindrical exterior surface mounted adjacent the capstan at a location such that the tape passes undistorted between the capstan and the second cylindrical element.

3,800,994

HORIZONTAL HEAT-SEAL LINER FOR FIBRE DRUMS

Paul E. Bowen, Country Club Hills, and Leigh D. Evans, Alsip, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,511
Int. Cl. B65d *5/56, 5/60*
U.S. Cl. 229—14 B **4 Claims**



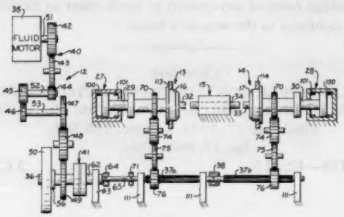
A fibre container having a tubular body, a bottom member closing one end and a metal chime securing the bottom member to said tubular body, said container having an improved tubular flexible liner therein. The flexible liner may comprise a thin film of a polymeric material having the desired barrier or protection characteristics for the bulk material to be stored, and is divided into two portions by a horizontal heat seal. An upper portion provides an inner container for the bulk material, while the lower portion is integrally connected to the bottom of the fibre container through an interlock between the metal chime and the bottom member.

3,800,995

TWIN-SPINDLE INERTIA WELDING MACHINE

Douglas G. K. Franks, and Ira H. Sage, both of Peoria, Ill., assignors to Production Technology, Inc., Peoria, Ill.

Filed Aug. 25, 1972, Ser. No. 283,703
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **7 Claims**



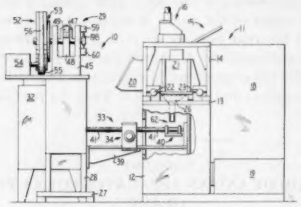
An inertia welding machine includes a pair of axially movable spindle assemblies arranged in facing relation with a nonrotating fixture arranged between the two spindle assemblies. A single drive train including a flywheel is coupled to both of the spindle assemblies through a synchronizing shaft. Preferably, a clutch is arranged between the flywheel and the two spindles to allow very precise control over the final length of weld parts joined by the machine and one of the spindle assemblies is selected to have a slightly increased rotating mass to overcome a tendency for angular misalignment between the two spindle assemblies.

3,800,996

APPARATUS FOR FLASH REMOVAL

Francis W. Fuller, and Jozef Kiwalle, both of Peoria, Ill., assignors to Production Technology, Inc., Peoria, Ill.

Division of Ser. No. 212,391, Dec. 27, 1971, Pat. No. 3,748,719. This application Mar. 26, 1973, Ser. No. 344,953
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **9 Claims**



A method and apparatus for removing hot flash from a welded article including a receiving unit for accepting the welded article from a welding machine, apparatus for quickly transferring the article to a flash removal station, and a flywheel powered flash removing apparatus. The welding machine, receiving unit, transfer apparatus, and flash removing apparatus are controllably interconnected for sequential operation to provide a relatively high speed flash shearing and stripping operation.

3,800,997

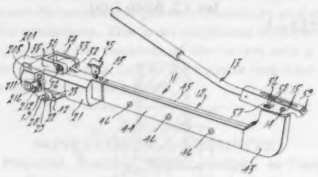
CABLE WELDING TOOL

William E. Good, Cinnaminson, and Arthur S. Davies, Avalon, both of N.J., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Jan. 12, 1972, Ser. No. 217,096
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **24 Claims**

A tool for cold pressure welding workpieces such as coaxial cables together. The tool has a compact arrangement so that it

may be hand held and operated. A hydraulic pump and motor are incorporated for providing a force amplification which lends to the compactness and light weight of the assembly. The hydraulic motor operates pairs of dies which dies first grip the ends of the workpieces to be welded and then force these

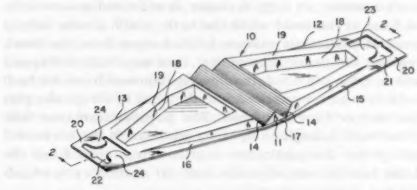


ends into engagement to achieve a cold pressure weld. A pressure relief valve is interposed in the hydraulic circuit for limiting the force applied to the dies. The dies are held in pivotally supported parts of the tool so that the tool may be conveniently opened for inspection, replacement or cleaning of the dies.

3,800,998
THERMOFORMED CONTAINER

Bryan R. Gask, Janesville, Wis., assignor to Prent Corporation, Janesville, Wis.

Filed Aug. 24, 1972, Ser. No. 283,424
Int. Cl. B65d *1/00, 85/00*
U.S. Cl. 229—2.5 **5 Claims**



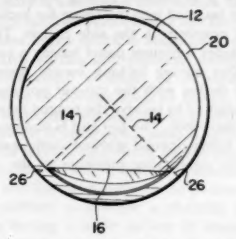
A one-piece container adapted to be thermo-formed and die cut out of thermoplastic sheet material comprises two compartment sections hinged to opposite sides of a central base section. Peripheral flanges of the compartment sections lie in a common flat plane when the container is formed and allow it to be die cut out of the surrounding material along the flat cutting plane. When the container is folded to its closed condition, complimentary recesses in the compartment sections confront each other to enclose the container contents and the peripheral flanges converge from the base section with their end portions in engagement with each other at the apex of the container to maintain the latter in that condition.

3,800,999
NON-SPILLABLE CUP LID

James J. Serritella, 3570 Powder Mill, Beltsville, Md.

Filed July 23, 1971, Ser. No. 165,611
Int. Cl. B65d *41/46*
U.S. Cl. 229—7 R **12 Claims**

The disposable lid for a coffee cup or the like has penetrable score lines around the sides of a 90° sectorial portion thereof for easily breaking off this portion to form a drinking access opening therethrough while the remaining portion of the lid serves to reduce the danger of spilling the contents of the cup when held in an unsteady cup support environment. Another penetrable score line extending near the periphery of the lid, between the sides of this sector, and a fold score line between the ends of this peripheral score line provide for a segmental flap to be broken open and bent on the fold score line to form

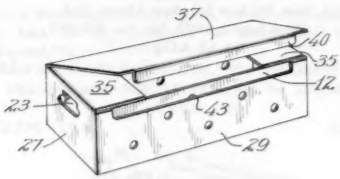


an access opening to the contents of the cup while providing a substantial shield against spilling the contents of the cup through the opening.

3,801,000
TWO PART CONTAINER

William J. Hurley, 1326 Navaho Cir., Sioux City, Iowa, and Thomas B. Dempster, 1512 W. Lunah, Sioux City, Iowa

Filed June 12, 1972, Ser. No. 261,703
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 R **3 Claims**

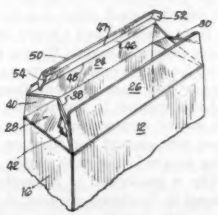


A two part container includes an inner tray section and an outer rectangular sleeve encircling said inner tray section. A cover panel is hinged to the upper edge of one wall of said sleeve and supports at its outer end a glue flap. A notch is provided in the upper edge of the sleeve wall opposite said one wall to accommodate said glue flap so that the glue flap may be adhered to the underlying wall of said tray section. Hand hole apertures which remain normally closed are provided in the ends of the container.

3,801,001
CONTAINER CONSTRUCTION

Robert E. Taylor, 1525 E. Fleming Dr. North, Arlington Heights, Ill.

Filed Feb. 24, 1972, Ser. No. 229,011
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **3 Claims**



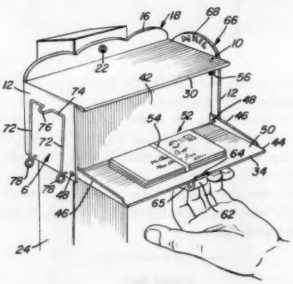
A container embodying improved top and bottom constructions wherein the top construction is formed from a blank in-

cluding opposing top panels which are joined to each other by side panels adapted to be folded under the top panels to define a space between one of the top panels and the portions of the side panels folded thereunder. The other of the top panels is provided with a projection having locking means thereon adapted to be inserted into the space for locking engagement with stepped openings in the side panels. The bottom construction includes a bottom panel having a cut-out portion, a tongue member having locking means thereon and lateral panels which define with the cut-out portion of the bottom panel a slot adapted to receive the tongue member for locking engagement therewith. The top and bottom constructions are incapable of being opened without disfiguration of the container, thereby minimizing pilferage of the contents of the container.

ERRATUM

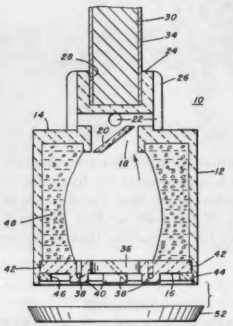
For Class 229—52 A see:
Patent No. 3,801,012

3,801,002
RURAL DELIVERY MAILBOX
Clarence A. Best, PO Box 341, New Albany, Ind.
Filed June 2, 1972, Ser. No. 258,987
Int. Cl. A47g *29/12*
U.S. Cl. 232—17 **5 Claims**



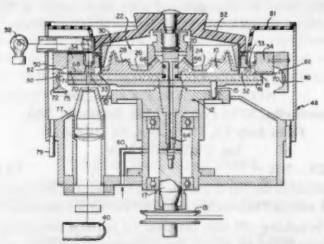
A rural mailbox housing has an open front and a cooperable open bottom surrounding by horizontal turned-in limit stop flanges, and is equipped with manually openable and closable closure means. The closure means is unique in that it embodies two panels joined to each other in a manner that one panel provides a front opening and closing door while the other panel normally rests atop several flanges and provides a suitable bottom wall for the receptacle portion of the housing. The first-named panel has transverse end flanges which are hingedly mounted in a manner to provide not only the normally closed door but an outstanding tray for incoming and outgoing mail. Stop pins aligned and fixed on the end walls check the swinging movement of both panels. A finger-grip with a retaining clip is positioned to normally position and retain the door panel in its closed position. A rotary dial or disc carrying the words "mail" and "empty" is accessibly mounted on one end wall. A novelly constructed small article clamp or clip, for miscellaneous folders and the like, is conveniently mounted on the other end wall.

3,801,003
STRUCTURE AND METHOD FOR SEPARATING INSOLUBLE PARTICLES FROM A MOLTEN BATH
Bernard J. Racunas, New Kensington, and John R. Minick, Upper Burrell Twsp., both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Sept. 28, 1972, Ser. No. 293,017
Int. Cl. B04b *1/00*
U.S. Cl. 233—3 **10 Claims**



A device and method particularly suitable for separating particulate matter in a molten salt or molten metal bath from the bath. The device comprises a unitary bowl and pump structure adapted to be immersed into and rotated in a pool of the bath, and to draw into the bowl the bath and particulate matter when the bowl is rotated. With rotation of the bowl, the particulate matter, in large measure, is collected in a concentrated form in the bowl while the bath, which is now largely depleted of particulate matter, is discharged from the bowl. To remove the particulate matter, and any bath entrapped therewith, from the bowl, the bowl is removed from the bath and a blade means is inserted into the bowl to scrape the particulate matter from the bowl. The particulate matter falls from the bowl through an opening provided in the lower end thereof. After the particulate matter is removed from the bowl, the bowl is returned to the bath for another cycle of collection and particle removal.

3,801,004
DEVICE FOR COLLECTING THE CONTENTS OF CUVETS IN A ROTATING SPECTROPHOTOMETER ANALYZER
Sterling T. Martin, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,282
Int. Cl. B04b *7/00*
U.S. Cl. 233—26 **3 Claims**



Known rotating spectrophotometers have a series of cuvets arranged in a ring member concentrically around a horizon-

tally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvets. As each cuvet passes a light source, the absorbence of each individual sample is detected and measured photometrically, and is converted to an electrical signal pulse.

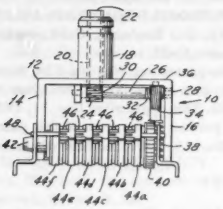
Upon completion of the measurements it is necessary to empty the cuvets and it is important that dispersion of the cuvet contents be avoided to prevent unsanitary and otherwise undesirable conditions. This is accomplished in the present invention by forcing the contents of the cuvets into a concave ring shaped member attached to the cuvette ring where the expelled liquid is held and confined.

3,801,005

NONREVERSIBLE ODOMETER

Gary A. Pniewski, Redford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 2, 1973, Ser. No. 347,267
Int. Cl. G01d *13/04*; **G01c** *22/00*
U.S. Cl. 235—95 R **8 Claims**



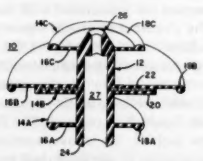
A nonreversible odometer for a vehicle includes a plurality of driven number wheels which display the distance traveled by the vehicle. The gear train of the odometer is designed so that an input thereto which increases the indicated travel of the vehicle is transmitted through the gear train to increase the traveled distance displayed on the number wheels. On the other hand, if the input to the odometer is one which would decrease the displayed indicated travel of the vehicle, the drive between the transfer gear and the first, or tenths wheel, of the number wheels is interrupted and no significant decrease is effected. The first, or tenths, wheel is also provided with a pair of up-counting pinion locking means which are operative to establish a locked meshing engagement between the number wheels and the up-counting pinion gears.

3,801,006

CONDITION RESPONSIVE PARA-METER CONTROL MEANS

Kenneth G. Kreuter, Winnipeg, Manitoba, Canada, and Klaus P. Mueller, Goshen, Ind., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 109,015, Jan. 22, 1971, which is a division of Ser. No. 884,947, Dec. 15, 1969, Pat. No. 3,575,343, which is a division of Ser. No. 594,851, Nov. 16, 1966. This application Nov. 6, 1972, Ser. No. 304,020
Int. Cl. G05b *11/48*; **G05d** *23/275*
U.S. Cl. 236—1 C **16 Claims**



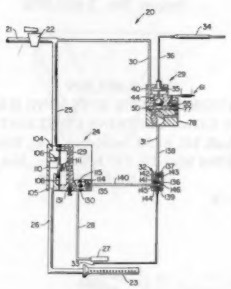
A unitary, multiple diaphragm structure is provided which includes integral valve means and flow passages, the structure being substantially entirely composed of a flexible resilient material. Additional rigid inserts are integrally molded into the basic structure to provide additional valving and seating arrangements for desired functional adaptability. The diaphragm structure is combined with hollow housing structures comprised of stacked plates or the like for mounting the peripheral portions of the multiple diaphragms of the unitary structure. Selective porting and pressure connections in the housing structures effect a family of differential pressure responsive modules or devices such as relays, comparators, and the like. A simplified temperature to pressure transducer is provided in which a compound bimetal spring selectively retains a spherical valve in an exhaust port to provide a modulated pressure output as a function of temperature changes. The transducer and family of differential pressure responsive modules are combined to provide a plurality of parameter control systems having a wide variety of operating modes. Several of the systems are convertible from one operating mode to another by merely changing the supply pressure magnitudes. The transducer is characterized by the fact that it requires no changeover adjustment to adapt it to the multiple modes of the systems.

3,801,007

OVEN CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE

Charles D. Branson, Greensburg, and Francis S. Genbauffe, Irwin, both of Pa., assignors to Robertshaw Controls, Richmond, Va.

Division of Ser. No. 93,540, Nov. 30, 1970, Pat. No. 3,703,988. This application Sept. 15, 1972, Ser. No. 289,305
Int. Cl. F23n *1/00*
U.S. Cl. 236—15 A **15 Claims**



A fuel control system for an oven having a source of fuel and main burner means. A pneumatically operated main valve is utilized for interconnecting the source to the burner when the main valve is actuated and for disconnecting the source from the main burner when the main valve is deactuated. A manually settable and thermostatically operated valve is provided for interconnecting a pneumatic control signal to the main valve to actuate the same when a temperature effect of the burner is below a set temperature effect and for disconnecting the pneumatic control signal from the main valve to deactuate the same when the temperature effect of the burner is above the set temperature effect, the thermostatically operated valve having a manually settable construction for controlling the cooking temperature effect of the burner and having a modifying construction for modifying the manually settable construction for controlling a burn-off cleaning temperature effect of the burner.

3,801,008

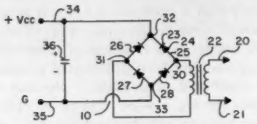
CLIMATIC CONTROL ESPECIALLY FOR ANIMAL BUILDINGS

Caleb M. Wenger, R.D. 1, Quarryville, Pa.

Continuation-in-part of Ser. No. 250,986, May 8, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 314,017

Int. Cl. F24f *7/02*; **H01r** *29/00*

U.S. Cl. 236—46 **7 Claims**



The present invention involves a climatic control for ventilation of the roof of buildings, particularly animal buildings. The system involves a thermostatic switch which discriminates between winter and summer positions. In the winter position it operates a control including a sensing variable resistor, which may for example change its resistance with change of sunlight, temperature, wind velocity, wind direction or evaporation. In the summer it connects with a timer switch which at night maintains the venting louvers open, unless they are closed by a rain switch. In the day the timer switch maintains the venting louvers closed or nearly closed. This is applied particularly to an animal building, preferably of the type which has venting louvers in a sloping roof directed toward the south.

ERRATUM

For Class 236—93 see:
Patent No. 3,801,078

3,801,009

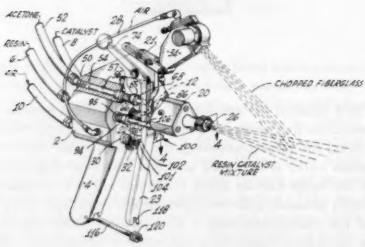
APPLICATOR GUN FOR APPLYING HARDENABLE PLASTIC COMPOSITIONS CONTAINING FIBERS

Joseph Marshall, III, 6153 Academy Ave., Riverside, Calif.

Filed May 29, 1973, Ser. No. 364,683

Int. Cl. B05b *7/14*

U.S. Cl. 239—9 **16 Claims**



An applicator gun which is used for spray application of hardenable plastic compositions, comprising a resin and a catalyst, and reinforcing fibers. The gun includes a body having an enclosed mixing chamber. Separate resin and catalyst valves connected with the body selectively connect the mixing chamber at one of its ends to external sources of resin and catalyst under pressure. Motion of a finger operated trigger towards the body, with which it is pivotally connected, operates the resin and catalyst valves to deliver resin and catalyst into the mixing chamber where they mix in the absence of air. The mixed resin and catalyst pass through an outlet nozzle at the opposite end of the mixing chamber and exit as a substantially non-atomized liquid jet. An air operated fiberglass chopper connected with the body directs an airborne jet of chopped fiberglass strands into the jet of mixed resin and catalyst externally of the outlet nozzle when it is supplied with air under pressure. An air valve, connected with an external supply of air under pressure, is operated by the trigger during motion relatively toward the body to supply air to the fiberglass chopper so that mixed resin and catalyst together with the entrained chopped fiberglass are applied in a liquid stream.

3,801,010

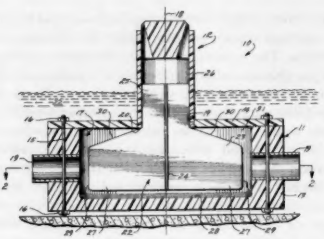
LOW PROFILE FOUNTAIN ASSEMBLY

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Continuation-in-part of Ser. No. 306,528, Nov. 15, 1972, and a continuation-in-part of Ser. No. 87,886, Nov. 9, 1970, Pat. No. 3,705,686. This application Dec. 11, 1972, Ser. No. 313,989. The portion of the term of this patent subsequent to Dec. 12, 1989, has been disclaimed.

Int. Cl. B05b *17/08*

U.S. Cl. 239—17 **8 Claims**

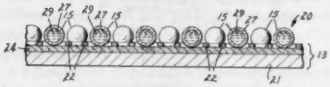


An ornamental fountain assembly includes a nozzle support housing which defines an internal chamber. Water inlet duct means communicate with the chamber. The chamber has a height along a vertical axis of the assembly which is at least equal to the diameter of the duct means adjacent the chamber. The chamber has a cross-sectional area in planes normal to the axis which is at least twice the effective water flow area of the duct means adjacent the chamber. A fountain nozzle is carried by the housing coaxially of the chamber and communicates with the chamber through the upper boundary thereof. The nozzle has a liquid inlet opening of area less than the cross-sectional area of the chamber. Liquid flow controlling and directing means are associated with the path of the water flow through the chamber from the opening of the inlet duct means to the chamber to the inlet of the nozzle. The liquid flow controlling and directing means are proportioned and arranged for causing liquid flowing along the path at the nozzle inlet to have an essentially axial flow characteristic and an essentially uniform liquid flow pattern. The flow controlling and directing means include the above-mentioned proportioning of the chamber relative to the inlet duct means and the nozzle inlet areas; this means also includes vertically disposed perpendicularly intersecting baffle members in the chamber arranged symmetrically about said axis.

3,801,011
HUMIDITY CONTROL MEANS AND PACKAGES CONTAINING THE SAME

Paul F. Guehler, and David A. Hofacker, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 18, 1972, Ser. No. 289,786
Int. Cl. A24f 25/00; A61l 9/04
U.S. Cl. 239—34 **11 Claims**

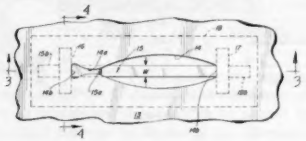


The disclosed humidistasis (i.e., humidity control) means comprises a sheet-like carrier with a partially exposed layer of water-containing capsules adhered thereto. The water-containing capsules are preferably spheroids less than about 3,000 microns in diameter and have vapor-transmissive walls. Prior to use, the humidistasis means can be stored in a moisture-tight bag. In use, the humidistasis means is preferably adhered to an inside surface of a container, thereby providing a humidistatic environment for dehydration-sensitive materials.

3,801,012
HANDLE CONSTRUCTION

Edmund J. Thelen, Deerfield, Ill., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Feb. 2, 1971, Ser. No. 111,940
Int. Cl. B65d 5/46
U.S. Cl. 229—52 A **3 Claims**



A handle construction is provided which is adapted to be incorporated in a blank for a folding carton. One panel of the blank is provided with an elongated opening which has a narrow neck portion. The portions of the panel at the ends of the opening are reinforced against rupture. A flexible strap traverses the longitudinal dimension of the opening. The end portions of the strap subtend the reinforced ends of the opening and are secured to the underside of the panel. The width of the strap is greater than the width of the narrow neck portion of the opening so that when the strap is in its initial inoperative position, the strap will be restrained by the neck forming portions of the panel from projecting outwardly from the opening above the exposed surface of the panel. The elongated opening, the reinforcing means, and the strap are subtended by a lamina which has the margin thereof bonded to the underside of the panel.

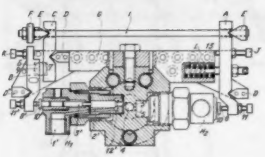
3,801,013
FLUID INJECTION DEVICE

Alain P. Renaud, Villa "La Cape" Chemin de Beauregard, Aix-en-Provence, France

Filed Apr. 9, 1973, Ser. No. 349,543
Claims priority, application France, Jan. 19, 1973, 73.01942
Int. Cl. B05b 7/26
U.S. Cl. 239—61 **10 Claims**

The present invention has as its object an improvement in fluid injection device and more particularly in double injection devices arranged for injecting into a mixing chamber two fluid chemical components which enter into reaction in the said chamber.

Said device comprises two needle injectors placed opposite to inject the said fluid into a common mixing chamber and

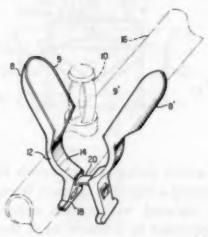


controlled by volumetric pumps driven by a common motor, and a connection mechanism connected to the said needles so that the opening of a first injector obtained by displacement of its needle when the second injector is closed produces the rapid opening of the second injector by correlative displacement of its needle.

3,801,014
SPRINKLER COVER

Joseph Cantales, 640 Pelham Rd., New Rochelle, N.Y.

Filed May 4, 1973, Ser. No. 357,372
Int. Cl. B05b 1/28, 15/04
U.S. Cl. 239—104 **5 Claims**



A protective cover for sprinkler heads which consists of two symmetrical parts defining a pair of open hollow cavities, the symmetrical parts being adapted to be biased together to form an enclosed cavity around a sprinkler head. A member having a curved flat surface which is adapted to be attached to the outer surface of a water pipe is connected to each symmetrical part. The curved surfaces of each of the members and the symmetrical parts are biased respectively around a water pipe and together by a spring which is attached to the members to form a closed cavity around the sprinkler head.

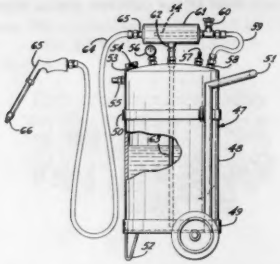
3,801,015
FOAM GENERATOR

Edward O. Hayes, Phoenix, Ariz., assignor to James L. Stoltz, Phoenix, Ariz., a part interest

Filed Oct. 27, 1972, Ser. No. 301,650
Int. Cl. B05b 7/26
U.S. Cl. 239—175 **4 Claims**

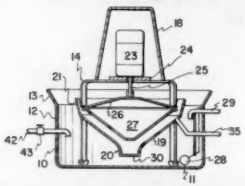
A foam generating apparatus includes a tank containing liquid chemicals for producing a foam. Gas under pressure is

applied to the tank to drive the liquid into a foam generator. In the foam generator the pressurized gas is injected into the



liquid to form a foam via a generator core having openings formed at staggered intervals and at right angles, one from another.

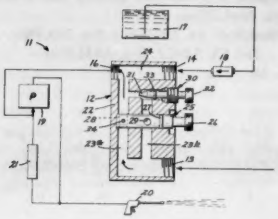
3,801,016
VAPORIZER
Robert T. Martin, 178 W. Third South, Salt Lake City, Utah
Continuation-in-part of Ser. No. 63,449, Aug. 13, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,770
Int. Cl. F23d *11/04*
U.S. Cl. 239—219 **15 Claims**



A vaporizer which includes a reservoir having bottom and sidewalls for storing a liquid, a support frame, an inner, flared liner centrally located within said reservoir, a conically-shaped disk supported by a frame such that the apex of said disk is positioned downwardly within said reservoir and within said liner, liquid level means operatively positioned within said reservoir to maintain a desired liquid level therein, drive means attached to said support frame and the disk for rotating said disk, a deflecting, impact baffle positioned outwardly from and about the upper perimeter of said cone-shaped disk. A top plate may be utilized to cover said cone-shaped disk, forming a hollow rotating unit. The cone-shaped disk may have an opening at the apex.

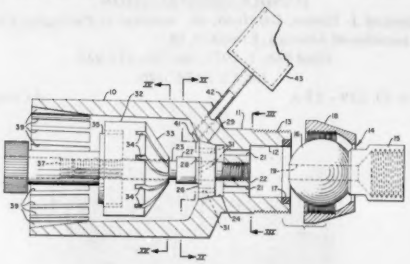
3,801,017
MANIFOLD FOR HIGH PRESSURE WASHER IN MECHANICAL MODE SELECTION
Michael J. Jarzynski, St. Paul, Minn., assignor to L & A Products, Inc., St. Paul, Minn.
Filed Feb. 12, 1973, Ser. No. 331,484
Int. Cl. B05b *7/26, 7/12;* **F16k** *19/00*
U.S. Cl. 239—310 **12 Claims**

A hydraulic system which receives and pumps a mixture of water and cleaning concentrate or rinsing water alone at high pressure to a spray nozzle for washing and cleaning purposes. To permit selection of the "mix" or "rinse" mode, the system includes a dual mode selection valve the single output of which is connected to the inlet side of a high pressure pump. The valve has a pair of separate inputs for water and concentrate, respectively; and includes a mode selector which determines whether the flow of water through the valve is free or



restricted. Under the latter condition, the flow to the pump inlet is less than the pump output capacity, and the concentrate is therefore drawn or aspirated into the valve to mix with the water.

3,801,018
SHOWER HEAD
Robert G. Plotz, 357 Middlegate Dr., Bethel Park, Pa.
Filed Aug. 4, 1972, Ser. No. 278,065
Int. Cl. B05b *7/04*
U.S. Cl. 239—316 **6 Claims**

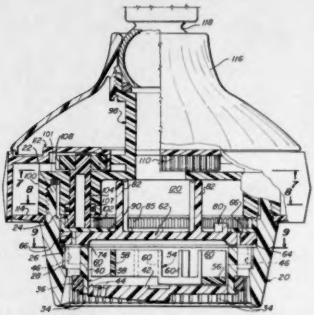


A shower head having a series of circumferentially spaced holes for delivering water to a supply chamber closed by a directional control valve. The control valve has a series of angularly arranged holes for producing water jets directed to impinge upon a grooved surface of a diffuser. The diffuser is mounted on a spindle which passes through the control valve into the body of the shower head. The diffuser has a diameter selected to define a narrow gap within the shower head from where a water mixture is discharged. Emollients, oils, soap or other scented materials are introduced by an injector through the shower head into a mixing chamber between the control valve and the rotary diffuser. Parallel grooves at the discharge end of the shower head deliver the water mixture in the form of shower producing water droplets.

3,801,019
SPRAY NOZZLE
John M. Trenary, Fort Collins, and David W. Smith, Wellington, both of Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.
Continuation-in-part of Ser. No. 264,959, June 21, 1972, Pat. No. 3,762,648. This application Sept. 4, 1973, Ser. No. 393,953
Int. Cl. B05b *1/08*
U.S. Cl. 239—383 **12 Claims**

A spray nozzle or showerhead is operable to selectively discharge a continuous spray, a cyclically interrupted pulsat-

ing spray of adjustable frequency of pulsation or a combination of the two sprays in which the proportion of the pulsating spray to continuous spray may be controllably varied. The nozzle housing is formed with two separate groups of discharge orifices. First and second flow passages extend through the housing between the housing inlet and one group of orifices via a rotary valve, while a third flow passage bypasses the rotary valve and extends from the housing inlet to the other of the two groups of orifices. Flow through the first flow passage impinges on blades mounted on the rotary valve to drive this valve in rotation at speeds dependent on the magnitude of flow through the first passage. Rotation of the rotary valve cylically interrupts flow to the first group of orifices to cause a pulsating spray to be discharged from the first group of orifices at a frequency of pulsation dependent upon the rotary speed of the rotary valve member. A shutter type valve operable from the exterior of the housing can be positioned to permit flow only through the first passage to discharge an all-pulsating spray of maximum frequency or to permit flow only through the third passage to discharge an all-continuous or nonpulsating spray. The shutter valve further is movable over a first range of movement through which the third passage is progressively closed as the first passage is progressively opened to vary the proportion of pulsating to nonpulsating spray discharge and to increase the pulsation frequency as the pulsating portion of the spray is increased. Over a second range of movement of the shutter valve, the first passage remains fully open while the second passage opening is varied between a fully closed and fully open position. Over this second range of movement of the shutter valve, the third passage is blocked at all times so that an all-pulsating spray is discharged and the frequency of pulsation of this latter spray is varied in accordance with the amount by which the second passage is opened.



3,801,020

AIR GUN AND NOZZLE THEREFOR

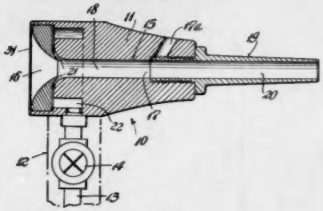
Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Dec. 19, 1972, Ser. No. 316,479

Int. Cl. B05b *7/12*

U.S. Cl. 239—417.3 **7 Claims**

A nozzle for an air gun to provide an exiting stream of air from a source of pressurized air in which the nozzle has a through passageway and an intersecting slit with the pressure of the exiting stream being higher than in similarly constructed nozzles before reversal of flow occurs by directing the pressurized air through the slit in the direction of the exit and restricting the passageway entrance for the ambient air.



3,801,021

AUTOMATICALLY ADJUSTABLE EXPANSION NOZZLE

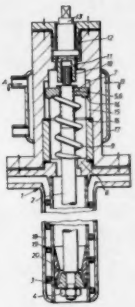
Rolf Jakob, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 7, 1972, Ser. No. 216,140

Claims priority, application Germany, Jan. 29, 1971, 2104197

Int. Cl. B05b *3/00*

U.S. Cl. 239—571 **14 Claims**



For expansion evaporation of liquids or gases an automatically adjustable nozzle is used, comprising a housing and a shaft arranged to be longitudinally displaceable therein, the shaft being provided at one end with a throttling member which in the closed position co-operates sealingly with a coacting member arranged on the end of the housing, the shaft being provided with a spring which is adjustable to a required closing pressure and being mounted frictionlessly in the housing.

3,801,022

SWIMMING POOL LIGHT SYSTEM

Harold C. Cassey, 136 Main St., Salunga, Pa.

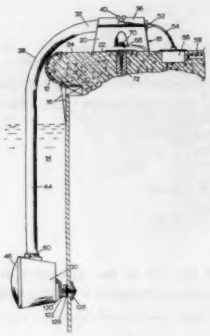
Filed Jan. 24, 1973, Ser. No. 326,466

Int. Cl. F21v *31/00*

U.S. Cl. 240—26 **11 Claims**

A swimming pool light system including base means adapted to be positioned adjacent the edge of a swimming pool, along either a deck or coping for support thereby and having a light head, supporting an electric light socket and bulb, on the lower end of a tube positionable within the water of the pool adjacent a sidewall surface thereof to illuminate the pool below the water level. Anchored clamp type base

means are included and the system is operated preferably by voltage substantially reduced from conventional household



voltage or by household voltage current, if protected by a ground fault circuit interrupter. A rechargeable battery also may be used as a safe low voltage power supply.

3,801,023

ARRANGEMENT FOR THE REMOVAL OF WASTE MATERIAL

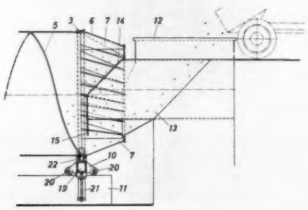
Jakob Altvater, 5,Furst-Erich-Str., 7954 Bad Wurzach, Germany

Filed Feb. 2, 1972, Ser. No. 222,870

Claims priority, application Germany, Feb. 15, 1971, 2107094

Int. Cl. B60p *1/64*

U.S. Cl. 241—83 **19 Claims**



An arrangement for the removal of waste material is disclosed in which waste material is loaded into cylindrical containers at each of a number of filling stations. After being filled, the containers are sealed and transported by lorry, rail or water to a discharge station at which the material in the containers is discharged into a suitable processing plant. Each container is provided with a hatchway engageable with filling means at a filling station, whilst the container is rotated about its longitudinal axis to cause waste material introduced into the container to be compressed by interaction with a helical blade which projects from the peripheral wall towards the interior of the cylindrical container. At the discharge station, the waste material is discharged from the cylindrical container whilst the container rotates in a direction opposite to its direction of rotation of the filling station. At the filling station, the container is mounted on a mono-rail, along which it is propelled to cause its hatchway to engage means for introducing waste material into the container. Each filling station is provided with rails extending transversely of the mono-rail and each container is rolled by a winch across these rails for loading on to a lorry or barge for transporting it to the discharge station. At the discharge station, an arrangement analogous to that which has been described at the filling station is provided, except that means for receiving waste material from the containers replaces the means for introducing the waste material therein. The filled containers, after being sealed, may be arranged to be sufficiently buoyant to float and may therefore be towed along waterways to a discharge station, such as a remote off-shore island.

3,801,024

APPARATUS FOR COMMINUTING TOBACCO

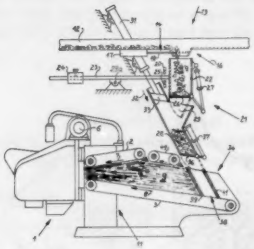
Uwe Elsner, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Aug. 12, 1971, Ser. No. 171,290

Claims priority, application Germany, Aug. 17, 1970, 2040637

Int. Cl. B02c *23/02*

U.S. Cl. 241—34 **9 Claims**



A tobacco shredding machine receives tobacco to be comminuted at such a rate that the weight of quantities delivered during successive identical unit periods of time is always the same. This enables the shredding machine to turn out shredded tobacco at a constant rate. The feeding unit which supplies tobacco to the shredding machine employs a weighing device which can weigh batches of tobacco or embodies a belt conveyor, a metering device which can operate intermittently or continuously and delivers tobacco to the weighing device, and a transporting device which transports tobacco from the weighing device to the shredding machine.

3,801,025

METHOD OF CONTROLLING THE AMOUNT OF MATERIAL IN A GRINDING COMPARTMENT OF A TUBE MILL

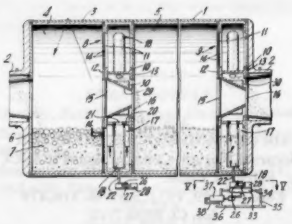
Pierre Arsene Slegten, 158, Avenue du Prince d'Orange, Brussels, Belgium

Filed Feb. 15, 1972, Ser. No. 226,590

Claims priority, application Belgium, Feb. 18, 1971, 763140

Int. Cl. B02c *17/06*

U.S. Cl. 241—70 **3 Claims**



Controlling the amount of material which is present in a grinding chamber with grinding members of a tubular grinding

mill which is divided into a plurality of successively arranged grinding compartments and material reservoir compartments which are in communication through openings which are not large enough to permit the passage of the grinding members from the grinding compartment to the material reservoir compartment by rotating the tubular grinding mill to cause the grinding members to grind the material and to move the ground particles into the material reservoir compartment, and during rotation removing a quantity of material from each material reservoir compartment and delivering a selected portion of the removed quantity to the next adjacent compartment which is downstream thereof. The quantity removed from the material reservoir compartment depends upon the arrangement of the rotatable radially extending scoop which forms a trough or shovel of partial segmental form which is adapted to engage and move through the material during each rotation of the drum to lift a selected quantity of the material upwardly and then to dump it onto a deflector plate so that it moves to the next adjacent downstream compartment. The quantity of material which is removed by one or more scoops is controlled by setting the individual rotative position of the scoop shovels so that they pick up either a greater or lesser quantity of material during each rotation, by adjusting the length of the scoop shovels so that the quantity is varied or by adjusting the amount of material which is either delivered to the next adjacent compartment or backwardly into the material reservoir compartment for recycling.

3,801,026

GYRATORY CRUSHER WITH HYDRAULIC ADJUSTMENT AND HYDRO-PNEUMETIC OVERLOAD SAFETY DEVICE

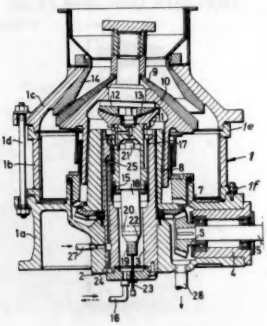
Hanns Decker, Cologne; Willy Jakobs, Porz-Grengel, and Helmut Stockmann, Wesseling, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Apr. 3, 1972, Ser. No. 240,668

Claims priority, application Germany, Apr. 5, 1971, 2116623

Int. Cl. B02c *2/06*

U.S. Cl. 241—215 **10 Claims**



A gyratory crusher whose wobbling crusher cone is supported by a spherical bearing on the upper end of a supporting shaft axially slidably mounted in a fixed tubular shaft is provided with a hydraulically operated adjusting device for the crusher cone. This adjusting device is formed by the bore in the fixed tubular shaft which is connected with a source of hydraulic liquid and the axially slidable supporting shaft acting as an axially slidable piston for adjusting the crusher cone selectively up and down. Furthermore an overload safety device is provided which comprises an at least partly yieldably constructed container which is filled with a prestressed compressible gas and removable from said tubular shaft in the upwardly direction. This container is substantially surrounded on all sides by the hydraulic liquid in the bore of said fixed tubular shaft.

3,801,027

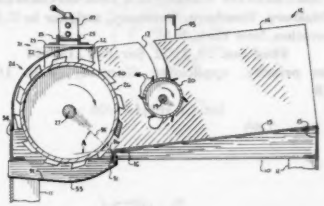
APPARATUS FOR CUTTING AND SHREDDING WOOD

Wayne H. Kubitz, Rt. 1 Box 840, Sandy, Oreg.

Filed Mar. 1, 1972, Ser. No. 230,885

Int. Cl. B02c *4/20*

U.S. Cl. 241—225 **8 Claims**



An apparatus for cutting and shredding wooden materials such as tree limbs and the like includes an inclined chute for receiving the material and delivering the same to a cutting station, a cutting bar mounted at the end of the chute adjacent such cutting station, and a cutting drum in operative juxtaposition to the cutting bar. Manganese steel teeth made by cutting a bar of square cross section on parallel planes forming an acute angle with the longitudinal axis of the bar are welded to the periphery of the drum in a spiral wrap. A feed roll is pivotally mounted at the sides of the chute such that it can float on the materials on the floor thereof to urge the same into contact with the drum.

3,801,028

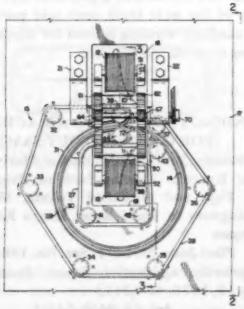
MACHINE FOR MAKING TWISTED WIRE BEADS FOR TIRES

John Albert LaBoda, Fairview Park, Ohio, assignor to Advance Manufacturing Corporation, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 190,753

Int. Cl. H01f *41/08*

U.S. Cl. 242—4 BE **1 Claim**



A method and machine for making wire beads for tires wherein the beads comprise one or more wire filaments helically wrapped around a solid metal core ring. The metal core

ring is of circular cross section and is supported in a holding mechanism that includes inner and outer endless belts which revolve the core ring about its axis of symmetry while at least one length of filaform material is wrapped around it in a helical path about the circular axis defined by the center of the core ring cross section. The pitch of the helical wrap is adjusted to place each convolution of the filament in a predetermined spaced relation to the next preceeding convolution. Thus, a plurality of convolutions are provided on the core ring with a single filament.

3,801,029

METHOD OF WINDING A TRANSFORMER

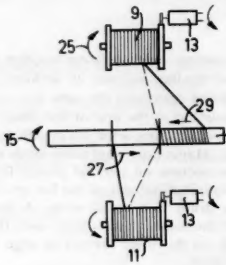
Dieter Malburg, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,444

Claims priority, application Germany, Feb. 10, 1971, 2106258

Int. Cl. H01f *41/06*

U.S. Cl. 242—7.03 **5 Claims**



A method of winding a transformer is disclosed, such a transformer being particularly useful as an isolating transformer for use between a television receiver and an image recording apparatus. The primary and secondary coils are wound one over the other with insulating intermediate layers, at least one primary layer and at least one secondary layer being alternately wound on to a winding mandril. An intermediate layer of insulating material is then applied as a cover and an auxiliary winding is wound adjacent to transformer being wound with the wire of a previous layer of turns during the winding of the next layer onto said previous layer. The wire of the auxiliary winding is used for winding a subsequent layer of turns onto the transformer.

3,801,030

YARN WINDING PROCESS AND A MACHINE ADAPTED FOR CARRYING OUT SAME

Takashi Kobatake; Jiro Manabe, both of Moriyama; Masaharu Imamura; Kyosuke Takeda, both of Shiga-ken; Tokinori Daimoto, Fuji, and Hirokichi Takata, Moriyama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

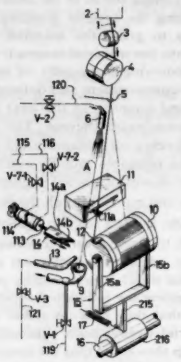
Filed June 29, 1071, Ser. No. 158,027

Claims priority, application Japan, June 30, 1970, 45-56632; July 19, 1970, 45-63113

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 R **4 Claims**

In winding a yarn onto a bobbin, the free end is first drawn and held by a suction device adjacent the rotating bobbin. A jet of air moves the yarn in close proximity to the bobbin for engagement by a catcher. A cutter severs the yarn adjacent the catcher and the yarn is wound on the bobbin while the waste is carried away by the suction device. Upon filling the



bobbin the yarn is cut and again engaged by the suction device. An empty bobbin is then substituted for the full bobbin and the cycle is repeated.

3,801,031

METHOD AND APPARATUS FOR MONITORING THROW-OFF LOOP FORMATION ON THE YARN GUIDING DRUM OF COIL WINDING MACHINES

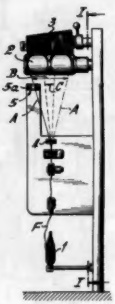
Heinz Kamp, Schwalmstr. 5, Rickelrath, and Walter Gith, Franziskanerstr. 12, Monchengladbach, both of Germany

Filed Oct. 26, 1971, Ser. No. 192,509

Claims priority, application Germany, Oct. 23, 1970, 2052117

Int. Cl. B65h *63/02*

U.S. Cl. 242—36 **12 Claims**



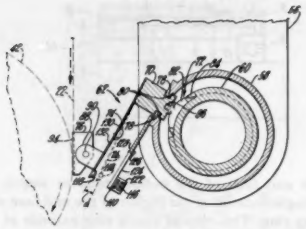
Method of monitoring the operation of a yarn winding machine having a yarn receiving coil and a drum for guiding the yarn onto said coil, said yarn having a predetermined reciprocating traverse stroke range, consists of the steps of monitoring the range of said traverse stroke, and interrupting the yarn winding operation in response to a range of the traverse stroke which falls short of said predetermined range, and device for carrying out the method.

3,801,032

APPARATUS FOR PACKAGING STRAND

James H. Sears, Anderson, and Bernard H. Jones, Pendleton, both of S.C., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed May 15, 1972, Ser. No. 253,351
Int. Cl. B65h 54/08, 54/28
U.S. Cl. 242—43 4 Claims



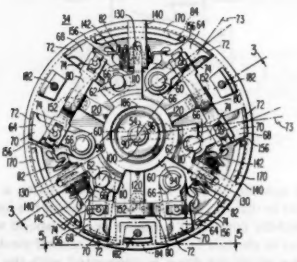
Apparatus for packaging strand as a wound package on a rotary collector including a movably mounted strand guide at the circumferential surface of the package; means for controllably moving the guide to keep it at the circumferential surface of the package during its formation, such means including a switch; means for sensing the size of the package as it increases in diameter and means responsive to the sensed size of the package effective to actuate the switch in selected proximity thereto.

3,801,033

APPARATUS FOR EASILY ENGAGING, DISENGAGING AND LOCKING LOAD TO ROTATABLE DRIVING ELEMENT

Robert Arthur Sanderson, Wayland, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,307
Int. Cl. B65h 19/02; F16d 13/04
U.S. Cl. 242—68.3 19 Claims



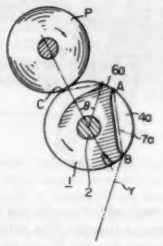
A load such as a tape reel is locked against rotation relative to a driving hub by a plurality of dogs. Each dog is pivotally mounted to the hub and includes a friction surface at its free end lightly engaging an annulus of the load. When the hub rotates, the friction surfaces lock to the annulus by wedging action, causing the load to rotate. The dogs and certain annulus engaging elements may be retracted concurrently to permit easy removal and engagement of the load.

3,801,034

YARN TRAVERSING DRUM USED FOR YARN WINDERS

Shin Tsukuma, Itami, and Kunito Kobayashi, Osaka, both of Japan, assignors to Kamitsu Seisakusho Ltd., Itami-shi, Hyogo-ken, Japan

Filed Sept. 13, 1972, Ser. No. 288,879
Int. Cl. B65h 54/48, 54/38
U.S. Cl. 242—43.2 3 Claims



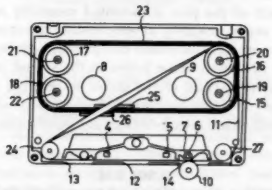
On each terminal end of the yarn traversing drum periphery, the reversing part of the yarn traversing groove is followed by an unrecessed region of a very short length and an intermediate groove having a specially dimensioned deep bottom so that a momentary increase in the yarn tension caused by the presence of the unrecessed region will minimize the possibility of ribbon formation on terminal end parts of the package under building.

3,801,035

ENDLESS TAPE CASSETTE

Wilhelmus Franciscus Aloysius Heylands, Emmasingel, Eindhoven, Netherlands

Filed Aug. 24, 1970, Ser. No. 66,291
Claims priority, application Japan, Aug. 23, 1969, 44-79643
Int. Cl. B65h 17/48
U.S. Cl. 242—55.19 A 1 Claim



A flat box-shaped cassette having front wall apertures cooperating with the drive capstan and recording and reproducing heads of a conventional recording and playback machine supports an endless tape retained in a genrrally rectangular coil by four flangeless spools so that tape can pass from the inner coil con-volution via suitable guides and recording and playback heads to return as the outer coil convolution.

3,801,036

PRODUCTION OF THERMOPLASTIC FILMS

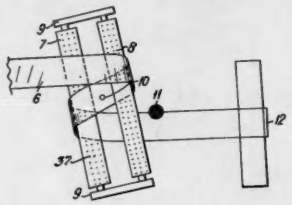
Robin Hasler, Bengeo, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 28, 1971, Ser. No. 157,306

Claims priority, application Great Britain, July 6, 1970, 32671/70

Int. Cl. B65h *35/02, 75/02*

U.S. Cl. 242—56.2 11 Claims



An apparatus and method for producing rolls of film having no hard spots by slitting a tubular film with oscillating slitting knives and compensating for the fluctuation in the edges of the slit film due to the oscillation of the knives so as to obtain a reeled film having good edge register.

3,801,037

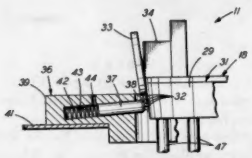
METHODS OF AND APPARATUS FOR COILING STRAND MATERIAL

Bradner Neil Monell, Litchfield Park, Ariz., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,279

Int. Cl. B21c *47/14*

U.S. Cl. 242—83 12 Claims



A strand coiler is provided with individually mounted pins spaced about a strand-engagement surface of a drum-type capstan. Each of the pins is mounted rotatably and reciprocally and is urged inwardly axially toward the strand-engagement surface by an associated compression spring. The pins provide the necessary force between the strand material and the engagement surface of the coiler so that the coiler functions satisfactorily and problems of adjustment and wear experienced with priorly used devices are significantly reduced.

3,801,038

CHUCK FOR A TUBE OR SLEEVE AND SERVING AS A BOBBIN SUPPORT

Olivier Wust, Seuzach, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

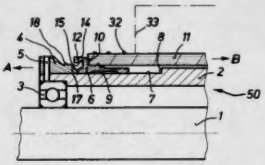
Filed Oct. 19, 1972, Ser. No. 299,024

Claims priority, application Switzerland, Sept. 7, 1972, 13135/72

Int. Cl. B65h *75/28, 75/32*

U.S. Cl. 242—19 15 Claims

A chuck or mandrel for a bobbin tube or sleeve serving as bobbin support embodying a thread catch ring and a thread severing ring defining therebetween a thread catching zone. The thread severing ring is provided at an end face with a substantially ring-shaped arrangement of spaced recesses and teeth formed between such recesses, these teeth each having an inner sharp cutting edge for engaging and separating or cutting a thread. The teeth are arranged in a direction facing away from the end face of the bobbin tube or sleeve. The thread catch ring is located at the region of the end face of the thread severing ring. This thread catch ring extends at least partially beneath the teeth of the thread severing ring when the tube is completely pushed onto the chuck. There are also provided thread clamping means.



3,801,039

TAPE APPARATUS FOR USE WITH TAPE CASSETTES

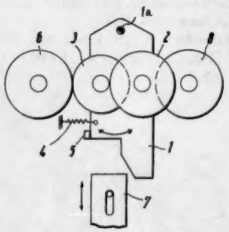
Reinhold Emmert, Fuerth, Germany, assignor to Grundig E.M.V. Electro-Mechanische Versuchsanstalt, Fuerth, Bayern, Germany

Filed Dec. 29, 1972, Ser. No. 319,844

Claims priority, application Germany, Jan. 4, 1972, 2200151

Int. Cl. B65h *59/38*; G03b *1/02*; G11b *15/13*

U.S. Cl. 242—191 7 Claims



A take-up spindle rotates at a first speed when a cassette tape advances in the play and forward modes of the apparatus. A pay-out spindle rotates at a higher second speed when the tape advances in the fast forward and the rewind modes of the apparatus. An electrical drive is connected with the spindles for rotating the same, and an arrangement for terminating the operation of the drive is provided, when the tape is fully spooled onto one or the other reel of the cassette. The arrangement includes a carrier movable between two positions and carrying a wheel on which is mounted a centrifugal switch which is connected into the current supply circuit of the electrical drive. The wheel is directly driven by the pay-out spindle when the carrier is in one position and is indirectly driven via a step-up gear by the take-up spindle when the carrier is in the other position.

3,801,040

STRIPPING AND FEEDING DEVICE FOR STRIP MATERIAL

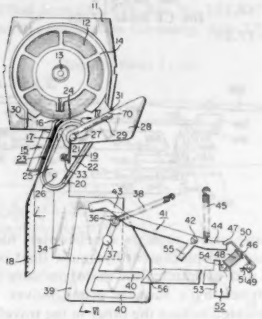
Torakiyo Yamanaka, Yokohama; Yoshihiro Shigeta, and Kuniyoshi Suzaki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1971, Ser. No. 186,854

Claims priority, application Japan, Oct. 7, 1970, 45-88001; Oct. 7, 1970, 45-88002

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—192 **14 Claims**



The invention provides a stripping and feeding device for strip material which includes a mechanism for rotating a roll of film or like strip material and positively strip the leader end portion therefrom and guide the same to a stripping station for feeding, and a film passage for controlling the direction in which the stripped leader end portion is effectively threaded from the roll, whereby the film feeding may be effectively achieved.

3,801,041

LEADER TAPE GUIDING APPARATUS

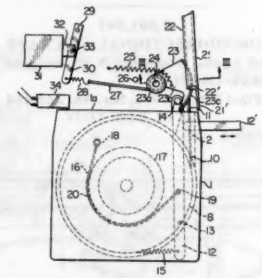
Yoshinobu Nakata, Osaka, and Michinori Nagahiro, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1972, Ser. No. 310,020

Claims priority, application Japan, Dec. 1, 1971, 46-97369

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—195 **8 Claims**



In an automatic tape loading apparatus in which a leader tape having rigidity and affixed to the end of magnetic tape is guided to a takeup reel by means of a leader guide, an auxiliary guide is provided between the leader guide and a cartridge accommodating therein a supply reel so as to securely guide the leader tape running out of the cartridge into the leader guide.

3,801,042

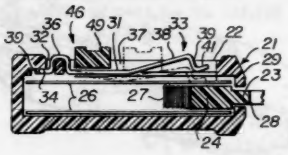
LATCH FOR TAPE CASSETTE REELS

George Dobson, 510 Upton St., Redwood City, Calif.

Filed Mar. 30, 1972, Ser. No. 239,571

Int. Cl. G11b *23/10*

U.S. Cl. 242—199 **6 Claims**



Conventional tape casettes have tape wound about two reels which, when the casette is removed from its storage box or from the tape reels or transcribing machine, are free to unwind with possible consequent damage to the tape. A latch for one, or both, reels is provided which slides in a slot in the top of the casette, the latch and casette top having cam surfaces which cause an inward projection on the latch to frictionally engage the reel or the desk-like shield in which the shield is enclosed. Thus unintentional unwinding of the tape is prevented.

3,801,043

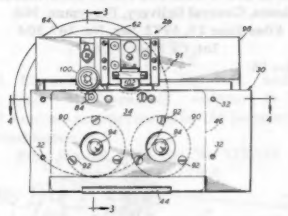
COMPACT CASSETTE TAPE TRANSPORT WITH DIRECT CAPSTAN AND TORQUE MOTOR DRIVES

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.

Filed Mar. 24, 1972, Ser. No. 237,707

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—199 **7 Claims**



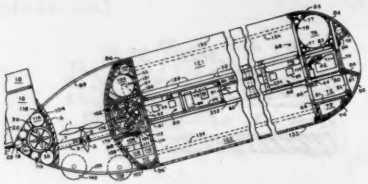
Capstan, which engages the tape in a cassette, is directly mounted on the capstan motor shaft. Spindles which engage the reels in the cassette are directly mounted on the shafts of two separate torque motors, one or the other of which is energizable to wind tape on one reel and unwind it from the other. A U cross-section motor mounting frame has a forward upright wall in the front panel of the transport housing, and a rearward upright wall spaced behind it within the housing. The capstan motor is fastened to the back side of the rearward wall and has an elongated shaft extending through both walls and terminating in a capstan on the front side of the forward wall. The capstan motor has an elongated bearing supporting the shaft adjacent the capstan. The torque motors are fastened to the back side of the forward wall and have spindle shafts extending through that wall. The torque motors are disposed between the forward and rearward walls, alongside the capstan elongated shaft, forward of the capstan motor, and within the axial projection of the capstan motor.

3,801,044

BALLOONED, STOL AIRCRAFT

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.

Filed Jan. 13, 1972, Ser. No. 217,450
Int. Cl. B64b *1/20*
U.S. Cl. 244—5 43 Claims



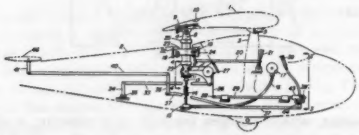
A winged aircraft, adapted to takeoff and land with its longitudinal axis at a steep angle of inclination to a horizontal plane, comprising: aerostatic structure having a center of lift forward of and above a plane thru the center of gravity that tends to turn the craft into the said steep angle; a controllable-thrust stern-elevating propeller in a wind channel, having a lift rearward of the center of gravity that in horizontal flight balances the torque of the aerostatic structure; landing gear near the stern and forward of its rearmost end that supports the inclined craft on its after end when on the ground (or water when floats are used); and a forward pivoted plane that provides additional lift and balances the unusually large (maximum) torque of the stern-elevating propeller in takeoff and landing. The craft is preferably very long — like the dirigibles of the 1930's in length; and the resilient, inflated tubes of its load-carrying body are preferably flat-ended, inflated with helium at high pressure, and comprise strong, flexible material that will bend without fracture in unusual, dangerous, extreme turbulence while underway.

3,801,045

INTEGRAL CONTROL SYSTEM FOR SAILPLANES

Edward B. Jones, General Delivery, Perryman, Md.

Filed June 29, 1972, Ser. No. 267,504
Int. Cl. B64c *31/02*
U.S. Cl. 244—16 8 Claims



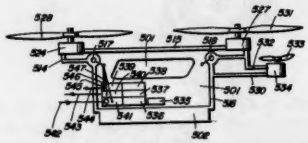
An internal control system is provided for sailplanes for dynamic soaring. This system permits coordinated movement between any two of three elements, namely the wing, elevator, and control stick, independent of the third, and provides a means of aileron control on a pivotable wing without externally exposed wires or struts to create drag. Any change of pitch of the wing is countered by a change of pitch of the elevator without changing the position of the control stick. If the wing is held fixed, for example, in landing, the stick will move the elevator. If the elevator is held fixed or becomes jammed, the control stick can be used to change the pitch of the wing to maintain control. This coordinated movement is made possible by differential linkages provided in the controls.

3,801,046

FLUID BORNE CRAFT DRIVEN BY HYDROSTATICALLY OPERATED PROPELLERS GOVERNED BY AN ACCIDENT PEVENTING AUTOMATIC CONTROL DEVICE

Karl Eickmann, 2420 Tshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation of Ser. No. 48,849, June 11, 1970, abandoned, which is a continuation of Ser. No. 766,741, Oct. 11, 1968, abandoned, which is a division of Ser. No. 552,559, May 24, 1966, Pat. No. 3,405,890. This application Apr. 11, 1972, Ser. No. 243,519
Int. Cl. B64c *27/08*
U.S. Cl. 244—17.23 3 Claims



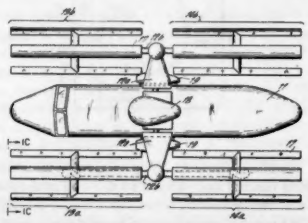
A fluid borne craft, such as a helicopter, has propellers driven by positive displacement hydraulic fluid operated motors, supplied with hydraulic fluid under pressure from a pump or the like driven by a suitable prime mover. One of the propellers is located behind the other in the travel direction of the craft. The motors are connected in series in the hydraulic flow circuit, and constitute an upstream motor and a downstream motor, so that the propellers operate at substantially equal angular velocities. By-pass means are associated with at least one of the fluid motors, so that a very restricted amount of the working fluid, supplied to the motor, can by-pass from a supply line into a return line to adjust the speed of the associated motor to a limited extent. Radar means on the craft continuously scan the projected flight path or direction of the craft so as to detect any obstacles or any approaching craft. The radar means is connected to electronic and electromagnetic control means and force intensifiers in such a manner that, responsive to a radar pulse reflected from an object in the path of the vehicle, an adjustment is made in the speed, travel direction, or attitude of the craft so as to avoid a collision. The arrangement may also operate to reverse the direction of movement of the craft in order to avoid an imminent collision. The restriction of the cross-sectional area of the by-pass lines prevents tilting of the craft and accidents while assuring a suitable response to avoid obstacles while maintaining the aircraft stable rest in the air during the obstacles avoiding action.

3,801,047

OMNIDIRECTIONAL AIRCRAFT

Joseph L. Dell'Aquila, Flushing, N.Y., assignor to Wendros Company, Hicksville, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,454
Int. Cl. B64c *27/74*
U.S. Cl. 244—19 13 Claims



A rotary wing aircraft capable of omnidirectional flight having a plurality of lift devices disposed on support means out-

board of a fuselage, each lift device having a plurality of airfoils which rotate about an axis which is perpendicular to the lift vector and substantially parallel to the normal direction of flight, and means for varying the angle of attack of each airfoil in four sectors of the rotation cycle.

3,801,048

METHOD FOR REDUCING DRAG OF VERTICAL TAKEOFF TYPE AIRCRAFT

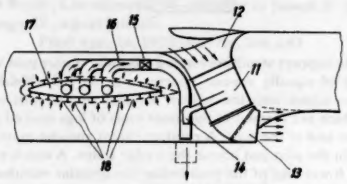
Rolf Riccius, Worpswede, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Breman, Germany

Filed June 23, 1971, Ser. No. 155,837

Claims priority, application Germany, July 17, 1970, P 20 35 445.4

Int. Cl. B64c *21/06*

U.S. Cl. 244—42 CE **1 Claim**



Method of reducing drag on an aircraft of the vertical takeoff variety and having a particular power plant for production of vertical thrust as well as a main engine for producing forward thrust during aerodynamic flight; the vertical thrust producing power plant is used as power source for controlling the boundary layer flow along at least part of the surface of the aircraft during aerodynamic flight, residual thrust of that plant is deflected to contribute to forward thrust, supplementing the forward thrust produced by the main engine.

3,801,049

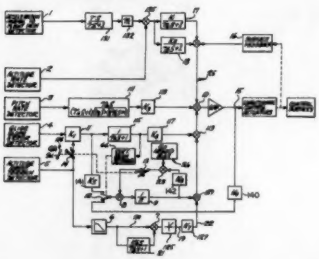
AUTOMATIC APPROACH LANDING AND GO-AROUND PITCH AXIS CONTROL SYSTEM FOR AIRCRAFT

Robert D. Simpson; Jimmie H. Boone, both of Bellevue, and Gary A. Chenkovich, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 31, 1972, Ser. No. 221,958

Int. Cl. B64c *13/18*

U.S. Cl. 244—77 A **11 Claims**



The invention relates to a system utilizing an exponential control law for glide slope capture and flare. The capture maneuver from above or below the beam, is a function of decreasing glide slope beam error in the same manner that the flare maneuver is a function of decreasing altitude above the runway. The present autopilot approach coupler is an altitude rate command system which provides switchless signal processing during glide slope capture, tracking and flare, and in addition, provides automatic go-around control from any altitude during the approach.

3,801,050

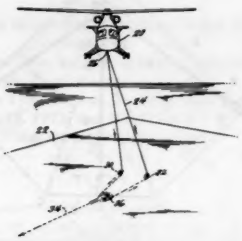
HELICOPTER HAUL-DOWN AND SECURING SYSTEM

Walter N. Stone, Bloomfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Feb. 23, 1973, Ser. No. 335,110

Int. Cl. B64f *1/12*

U.S. Cl. 244—115 **6 Claims**



A system for hauling down and securing a helicopter or the like with a haul down cable loop which attaches at one point to the helicopter and at another point to a deck winch. The cable loop passes through the deck at two separated locations via swivel sheaves so that while the helicopter is being hauled down, the cable acts like a single cable, exerting a downward force and, after the helicopter is on the deck, exerts both vertical and lateral forces to secure the helicopter on the deck. The cable loops over a draw sheave below deck, which is connected to the winch by a draw line so that the haul down cable is free to run over the draw sheave to equalize tension during haul down. After landing, the sheaves and cables would be locked by suitable braking means so that the two cables from the helicopter to the deck-mounted sheaves can restrain the helicopter.

3,801,051

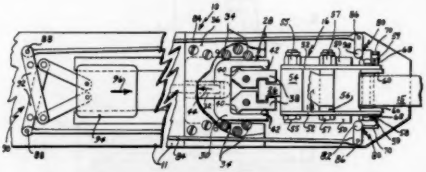
TOW PLATE

Thomas J. Hosterman, Fayetteville, N.C., and Frank S. Goodell, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1973, Ser. No. 322,571

Int. Cl. B64d *17/64*

U.S. Cl. 244—137 R **9 Claims**



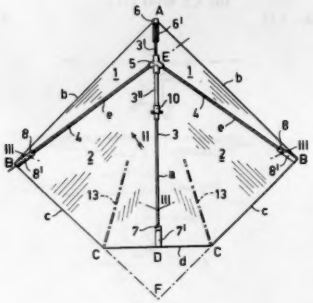
A tow plate for use in a cargo carrying aircraft having the capability of transferring the force of a drogue chute to an extraction chute(s) and directly to a load. The operation of the tow plate relies upon a solely mechanical clevis assembly for its force transfer operation. Furthermore, under emergency conditions the clevis assembly is capable of jettisoning the drogue chute before the force transfer has occurred. All action is highly reliable since it is based on a mechanical design.

3,801,052

SAILPLANE

Alessandro Quercetti, Via Bardonecchia, 77/16, I-10.139 Torino, Italy

Filed Oct. 30, 1972, Ser. No. 301,805
Claims priority, application Italy, Nov. 16, 1971, 70739/71
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R 9 Claims



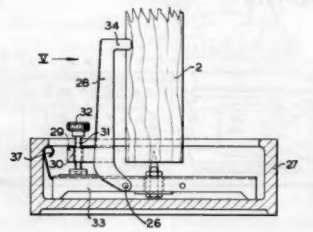
A sailplane wherein a flexible sail is loosely connected at its corners to the ends of a rigid framework comprising a central longitudinal rod and a pair of oblique rods directed laterally and backwards, whereby during flight the sail assumes, under the air pressure, a conformation including forward portions of general positive incidence and rearward portions of general negative incidence.

3,801,053

CHRISTMAS TREE STAND OR THE LIKE

Wilmar Laute, Max Loebner Strasse 36, 53 Bonn-Bad Godesberg, Germany

Division of Ser. No. 188,225, Oct. 12, 1971. This application Jan. 29, 1973, Ser. No. 329,042
Claims priority, application Germany, Feb. 5, 1973, 2106221
Int. Cl. A47g *33/12*
U.S. Cl. 248—44 4 Claims



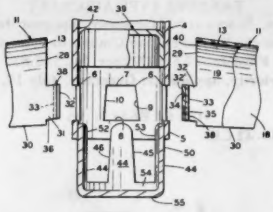
A gripping stand comprising a plurality of upwardly directed, substantially equally spaced arms which pivot onto a tree trunk and are tightened by downwardly directed bolts, the arms and tightening bolts being attached to or engaging a water pan which holds water for the trunk and acts as a structural stabilizing component of the stand for the tree.

3,801,054

TABLE SUPPORT CONSTRUCTION AND MOUNTING

Matthew P. Glowacki, 28 W. 251 Timber Ln., Chicago, Ill.

Continuation-in-part of Ser. No. 178,197, Sept. 7, 1971, abandoned. This application June 12, 1972, Ser. No. 261,702
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.7 20 Claims



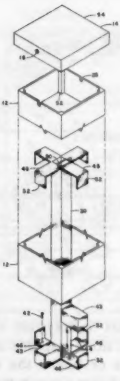
A table support structure having a hollow center post with a plurality of equally spaced apertures in its lower end. The apertures admit into the hollow interior of the post wedge loops which are formed at the inner ends of legs spaced about the lower end of the post. A reinforcement annular member is located in the post just above the wedge loops. A cap is placed into the lower end of the post below the annular member and wedge lugs project upwardly from the cap through respective eye loops wedging between the eye loops and the interior of the post and drawing the inner ends of the respective legs into tight complementary engagement with the exterior of the post. The lugs are coined to contour their exterior surfaces and to complementably mate with the interior preferably cylindrical surface of the post. The coining provides deformable thin edge portions which deform against the eye loops when the lugs are driven through the eye loops attendant to the cap being forced into the inner end of the post thus securing the parts in tight engagement. The lower end of the post may be peaned about the cap or the cap and annular member may be bolted together.

3,801,055

LOCKABLE SUPPORT FOR ARTISTIC RENDERINGS ON DISPLAY

Roy T. Stenger, 4709 60th Ave., West, Tacoma, Wash.

Filed Sept. 8, 1972, Ser. No. 287,238
Int. Cl. A47g *29/00*
U.S. Cl. 248—176 5 Claims



A lockable support for artistic renderings on display, in a preferred embodiment, comprises a hollow column, a floor-

secured upright frame positioned centrally within the column having a lock acceptor means at its top, and a lockable top cover which accepts the base of the artistic rendering to be displayed. This lockable support protects the displayed article from theft and from falling, when the top cover with the artistic rendering is positioned on the column and locked to the frame, making unaccessible all fastener means used to secure the displayed object so long as the locking mechanism remains engaged.

In another embodiment, the upright frame is weighted near the floor, in lieu of bolting to the floor. Each embodiment makes a secure and attractive pedestal for use in museums, public buildings and elsewhere, where both stability and securability of the artistic renderings, such as sculptures, is sought.

3,801,056

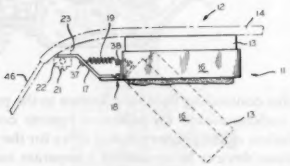
TISSUE PACKAGE HOLDER AND DISPENSER

Samuel Brody, Lincolnwood, Ill., assignor to Joseph P. Dumit, Chicago, Ill., a part interest

Filed Apr. 24, 1972, Ser. No. 246,693

Int. Cl. F16m *13/02*

U.S. Cl. 248—205 **7 Claims**



A tissue package holder and dispenser which maintains the package in abutment with the ceiling of an automobile. The holder comprises a bracket and spring arrangement for holding the back of a tissue box contiguous to the ceiling of the car preferably between the driver and the passenger next to the driver with the open box facing downward to provide easy access to the tissues.

3,801,057

APPARATUS FOR THE PRODUCTION OF RECORDING ELECTRODES OF THE MULTIPLE NEEDLE TYPE

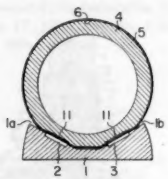
Tadashi Kato, Yamato, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,308

Claims priority, application Japan, Dec. 10, 1971, 46-100422; Oct. 12, 1972, 47-102019

Int. Cl. B29c *27/30*

U.S. Cl. 249—83 **10 Claims**



An apparatus comprising an upper mold in the form of a drum formed in its outer periphery with a thread of a very small pitch, 0.25 mm. for example, and having a wire wound in convolutions in the thread formation, and a lower metallic mold formed at its top with a plurality of upper mold support surfaces forming therebetween an upwardly diverging obtuse angle and each being formed therein with a rectangular recess for receiving a resin injected therein. The top of the lower metallic mold may be formed with an upwardly curving upper mold support surface in place of the obtuse angle forming surfaces. After the upper mold is placed on top of the lower mold with the major axis of the plurality of rectangular recesses in the latter being disposed axially of the former, an electrically insulating resin is injected in the recesses and allowed to solidify therein. After the resin has solidified, the lower mold is removed from the upper mold and the rectangular resin bars are removed from the outer periphery of the drum-shaped upper mold by severing the wire and laminated together to produce recording electrodes of the multiple needle type.

3,801,058

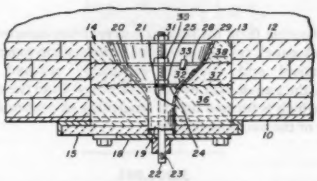
APPARATUS FOR FORMING A REFRACTORY NOZZLE BODY

Louis Boto, Baytown, Tex., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 173,438, Aug. 20, 1971. This application Jan. 15, 1973, Ser. No. 323,570

Int. Cl. B28b *7/18*

U.S. Cl. 249—142 **6 Claims**



An apparatus for forming a refractory nozzle body in a vessel, such as a tundish from which liquid metal is teemed into a continuous-casting mold. The apparatus comprises a plurality of forming sections, which together are contoured to define a nozzle well. The sections are installed one at a time in an opening in the refractory lining of the vessel. As each section is installed, a layer of plastic refractory is rammed therearound.

3,801,059

MOULD FOR USE IN FILLING OF HOLLOW BODIES WITH FOAM AND FOR THE PRODUCTION OF HARD-FOAM ARTICLES

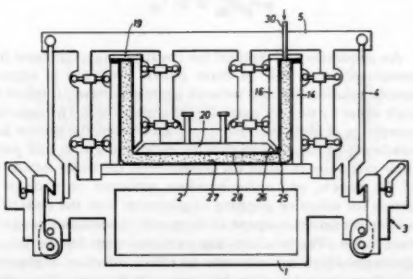
Herbert Lippold, Cologne, Germany, assignor to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed June 15, 1972, Ser. No. 263,057

Claims priority, application Germany, June 22, 1971, P 21 30 801.0

Int. Cl. B29c *1/16*

U.S. Cl. 249—134 **11 Claims**



For filling hollow bodies with foam and for the production of hard-foam articles a mould with removable walls is used,

one mould wall being formed by a backing table wherein the removable mould walls are supported on a supporting platform by means of parallel guide elements.

3,801,060

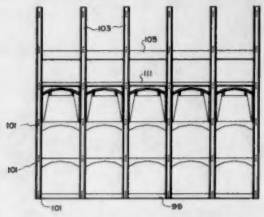
COLLAPSIBLE CRYPT FORMING SYSTEM

Joseph B. Fratesse, P.O. Box 430, Carmal, Calif.

Filed Apr. 5, 1971, Ser. No. 131,260

Int. Cl. B29c 9/24

U.S. Cl. 249—144 **3 Claims**



A collapsible form for making a crypt from concrete including a back panel, two separate side panels, a top panel, header, and vertical end channels releasably secured together whereby the panels may be easily removed from the interior of a crypt which is formed by the hardening of concrete over the exterior of the assembled form.

3,801,061

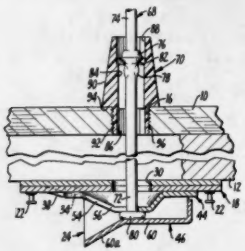
FORM PANEL WITH GROUTING PLUG CORE

Jack A. Holt, San Bruno, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Division of Ser. No. 824,359, April 30, 1969, Pat. No. 3,693,931, Continuation-in-part of Ser. No. 683,558, Nov. 16 1967, abandoned. This application July 2, 1971, Ser. No. 159,151

Int. Cl. E04g 17/12

U.S. Cl. 249—190 **4 Claims**



An apparatus and method for constructing a concrete form comprised of a pair of form panels arranged in opposed spaced relationship and secured against movement relative to each other by tie rods extending therebetween. The apparatus comprises conical grouting cores secured to the panels independently of the rods to slidably receive the rods and permit their extension through the panels from the outer side of one of the panels, and waler brackets mounted on each of the panels for selective gripping engagement with the ends of the rods to prevent movement of the panels toward and away from each other. The brackets are provided with hinged jaw-like elements which are movable to effect selective engagement and disengagement of the brackets with the rods. When disengaged, these elements permit free slidable movement of the rods relative to the brackets. The method is directed to the construction of a concrete form by a "feed through system" wherein tie rods are fed through a pair of opposed panels and grouting cores secured thereto from the outer side of one of the panels. In the method, once the rods are fed through the panels, they are secured against axial movement relative thereto to maintain the panels in opposed spaced relationship. In an alternative embodiment, the apparatus and method is concerned with an arrangement wherein bushing inserts are secured to the panels in place of the conical grouting cores and cores or other sealing elements carried by the tie rods are cooperable with these inserts.

3,801,062

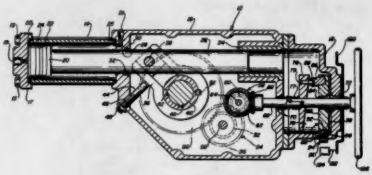
MANUAL VALVE OVERRIDE

Fred A. Arn, Rockville; William J. Dowicki, Vernon, and Howard E. Pierce, Watertown, all of Conn., assignors to Contromatics Corporation, Rockville, Conn.

Filed May 25, 1973, Ser. No. 364,140

Int. Cl. F16k 31/14

U.S. Cl. 251—14 **7 Claims**



Valves for controlling fluid flow known to the prior art have included various means for selective remote control in the event of failure of the primary power drive for the valve and in general these devices have utilized a separate control to engage and disengage a manual control while at the same time disconnecting a power control. The invention provides a cam member fixed to a drive shaft for manual control of the valve. The cam member has a surface disposed obliquely with respect to the axis of the drive shaft and angular indexing of the drive shaft without other movement provides for urging the drive shaft either into or out of engagement with another drive member.

3,801,063

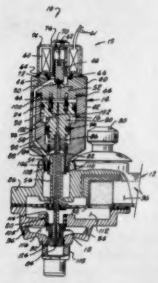
SOLENOID ACTUATED VALVE FOR ANHYDROUS AMMONIA FLOW METERS

John E. Holmes, and Eugene B. Berning, both of P.O. Box 1111, both of Garden City, Kans.

Continuation-in-part of Ser. No. 109,328, Jan. 25, 1971, Pat. No. 3,698,682. This application July 31, 1972, Ser. No. 276,526

Int. Cl. F16k 31/42

U.S. Cl. 251—30 **6 Claims**



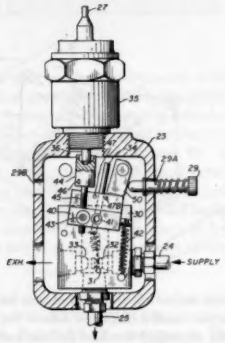
A solenoid actuated valve operator is used for controlling flow of a normally gaseous fluid in a conduit. A valve operator

housing is mountable with the conduit which has an internal valve seat. A solenoid mounts within the housing. A plunger extends from the housing and receives fluid pressure. The plunger has a valve closer on the extended end thereof. A passageway through the plunger communicates between the solenoid and the conduit. The core of the solenoid operates to open and close the passageway. Another passageway connects the solenoid assembly and the outside of the housing. The plunger is urged to a retracted position by a resiliently applied force. A solenoid actuated valve operator when mounted contacts the conduit valve seat with a valve closer. With the core member disengaged liquid fluid pressure exerts a force on the plunger overcoming the resilient force to extend the plunger and open the conduit.

3,801,064
VALVE ACTUATOR

Lewis Karl Harris, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed July 31, 1972, Ser. No. 276,632
Int. Cl. F16k *31/524*
U.S. Cl. 251—73 **3 Claims**

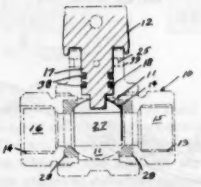


A two-position valve is connected to a temperature sensitive element through a linkage system which is manually positioned to actuate the valve to one of the positions, held in the one position by the temperature element responding to a normal range of temperatures, and through which the valve is actuated to the alternate position when the temperature leaves its normal range.

3,801,065
BALL VALVE

Burton Peters, Jr.; Leonard J. Nowak, and George J. Nolte, all of Erie, Pa., assignors to Burn Industries, Inc., Erie, Pa.

Filed Jan. 17, 1972, Ser. No. 218,076
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **1 Claim**

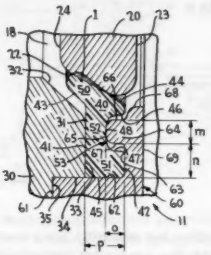


A ball valve made up of a body, a ball, and a key. The ball fits snugly in a spherical bore in the body. The ball has a crescent-shaped slot in its top. The bottom of the slot is a curve concentric to the cylindrical bore through the ball, thus the key fits into the slot and the curve of the key is concentric to the cylindrical bore and the bottom of the slot nests in the curve of the key. Therefore, the corners of the key engage a thick part of the ball and this has a minimum tendency to deform the ball when the key is rotated.

3,801,066
CRYOGENIC BUTTERFLY VALVE

Michael E. Miles, Northboro, and James F. Donnelly, Worcester, both of Mass., assignors to Jamesbury Corp., Worcester, Mass.

Filed July 1, 1971, Ser. No. 158,699
Int. Cl. F16k *1/228*
U.S. Cl. 251—306 **14 Claims**

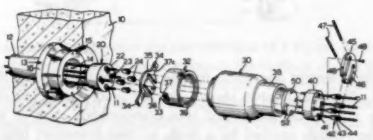


Disclosed is a butterfly valve particularly adapted for service with cryogenic fluids at temperatures down to −320° F and lower wherein a butterfly valve is provided with a seat that has a configuration that permits the seat to shrink upon exposure to lowered temperatures and to engage a protrusion in the valve housing. The forces generated by the shrinkage of the seat and the engagement with the protrusion cause the seat to deform in a controlled manner and maintain sealing engagement with the butterfly disc despite the dimensional changes of the valve components attributable to exposure to the cryogenic fluid.

3,801,067
ANCHOR HEAD FOR POST-STRESSED REINFORCED CONCRETE STRUCTURES

Robin Ashley Clovis Shorter, 6161 Bathhurst St., Apt. No. 703, Willowdale, Ontario, Canada

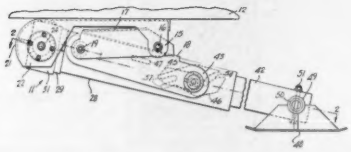
Filed Aug. 9, 1971, Ser. No. 169,996
Claims priority, application Canada, Aug. 19, 1970, 91071
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **14 Claims**



An anchor assembly for use with the post-stressed strands of a cable-reinforced concrete structure, in which a frusto-conical anchor head seats in the passage of a bearing plate having a frusto-conical central passage, the strands being arranged in the anchor head to have a coaxial resultant tension. A template for use in reseating the grips of the strands during post-stressing is laterally slotted to receive the strands but not the

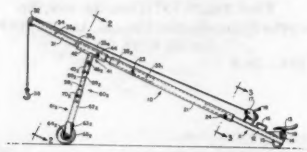
grips and has wings which project through longitudinal recesses in a jack stool. Another template is slotted to receive recessed grips and has removable bars to retain the grips in the slots. A further template has bossed apertures to register with corresponding countersunk passages in an auxiliary anchor head. A jacking device for use in post-stressing the strands comprises an auxiliary anchor head coupled with bearing means located beyond a stool, with a jack interacting between the stool and the bearing means and the auxiliary anchor head being movable along the stool.

3,801,068
AUTOMATIC FOLDING LANDING GEAR
Peter P. Kopas, Nicktown, Pa., assignor to Kogen Industries, Inc., Carrolltown, Pa.
Filed Dec. 22, 1972, Ser. No. 317,750
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **12 Claims**



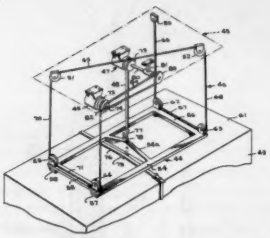
A folding landing leg assembly for a tractor trailer or the like. The assembly has a main leg pivoted on a bracket with a telescoping foot-carrying portion having a traveling nut engaged by a screw journalled axially in the main leg. The screw is driven by a hand crank through a crankshaft coaxial with the main leg pivot axis and gearing. The main leg is also connected to the bracket by a pair of link arms, the lower link arm being secured to a transverse shaft journalled in the main leg. A cam on this shaft is engagable by a transverse pin on the foot-carrying portion to automatically fold the leg assembly when the foot-carrying portion is elevated by operating the hand crank.

3,801,069
WEIGHT LIFTING AND TRANSFER DEVICE
Cecil M. McCarstle, 11734 Fairhauen Dr., Baton Rouge, La.
Filed Aug. 31, 1970, Ser. No. 68,420
Int. Cl. B66c *23/60*
U.S. Cl. 254—143 **7 Claims**



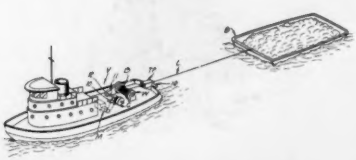
A light weight apparatus for the lifting and if desired movement of various loads is shown, the apparatus being capable of being rapidly dis-assembled into components each of which can be readily carried by a man, so that transport into confined spaces, or through restricted passages, is easily accomplished. The apparatus includes a boom section, including a slidable sleeve segment for alteration of length and means for fixing a desired length; a leg-socket device also slidable positionable on the boom, and having a pair of downwardly extending, angularly displaced leg sockets for receiving a pair of legs, each including a foot portion having a rubber tired wheel as the ground contacting element and including a telescoping strut piece so that the length of the leg assembly can be altered, means being provided for fixing each leg at the desired length. A winch and an operator's seat are attached to the lower segment of the boom, a cable or rope operated by the winch running over a pulley in the upper extremity of the boom assembly and terminating at a load hook. The variable lengths of the boom and legs, and the variable positions possible of the leg-socket device make it possible to assemble the apparatus in a large number of configurations providing lifting ability ranging from a low mechanical advantage up to a configuration inherently stable in that the load weight point is within the confines of the triangle defined by the ground contact points of the two wheels, and the lower extremity of the boom assembly.

3,801,070
HOIST SYSTEM
Frank N. Piasecki, Haverford, Pa., assignor to Piasecki Aircraft Corporation, Philadelphia, Pa.
Division of Ser. No. 882,687, Dec. 5, 1969, Pat. No. 3,661,415.
This application Aug. 26, 1971, Ser. No. 175,390
Int. Cl. B66c *1/00*
U.S. Cl. 254—144 **8 Claims**



A hoist system including elevated means having spaced contact points, carrier means disposed below the elevated means, having similarly arranged contact points, cable means operatively interconnecting the contact points for carrying the carrier means below the elevated means, means for varying the effective length of the cable means disposed at a selected contact point, one end of the cable means being fixedly secured to a selected contact point and the opposite end thereof being operatively connected to the cable length varying means whereby upon operation of the cable length varying means the effective length of the cable means will be varied correspondingly to vary the vertical displacement of the carrier means relative to the elevated means.

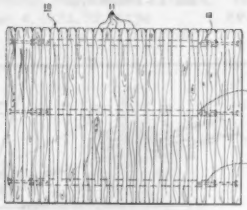
3,801,071
TOWING WINCH CONTROL SYSTEM
Charles D. Barron, Huntington Beach, Calif., assignor to Byran Jackson, Inc., Long Beach, Calif.
Continuation of Ser. No. 110,695, Jan. 28, 1971, abandoned.
This application Oct. 6, 1972, Ser. No. 295,758
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 R **15 Claims**



A towing winch control system in which the winch for the towing cable is driven through a slipping clutch to apply a sub-

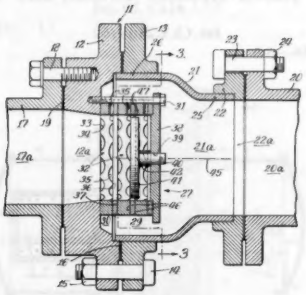
stantially constant tension to the towing cable, and a position sensor and a tensiometer are operated to control the length of the tow cable between the towing winch and the object being towed and to limit the load on the cable to prevent parting of the cable.

3,801,072
FENCE PANEL
James Henry Newberry, Jr., 1627 Salem, Richardson, Tex.
Filed May 4, 1972, Ser. No. 250,412
Int. Cl. E04h 17/14
U.S. Cl. 256—19 2 Claims



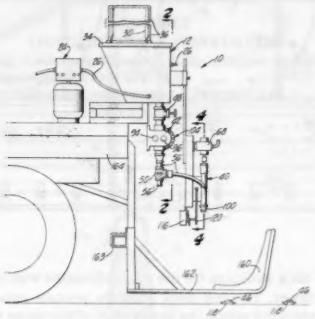
Disclosed is a process for reproducing a fiberglass panel having the physical appearance of a fence made from conventional materials. A model fence panel is constructed from conventional materials, a mold is formed on the face of the model panel, and a fiberglass panel formed on the mold. The fiberglass panel duplicates the physical appearance of the original panel on one face and includes an integrally formed mounting frame on the opposite face. The panels are supported between conventional fence posts to form a fiberglass fence having the physical appearance of a conventional fence.

3,801,073
FLUID MIXER
Willard A. Kates, Deerfield, Ill., assignor to The W. A. Kates Company, Deerfield, Ill.
Filed Dec. 27, 1972, Ser. No. 318,866
Int. Cl. B01f 15/02
U.S. Cl. 259—4 17 Claims



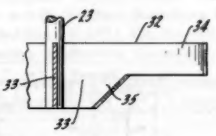
A fluid mixer wherein a plurality of fluid jets are delivered to a chamber in angled relationship to each other for turbulent mixing therein. The jets are produced by a plurality of grooved annular elements wherein the grooves are chordal and arranged at opposite angles at different positions spaced axially of the mixer. The annular elements may be stacked to define a desired tubular array. Structure is provided for selectively closing the grooves to provide a pressure regulation when desired.

3,801,074
MIXING AND DISPENSING APPARATUS
Joseph William Montigny, 382 E. Merced, West Covina, and Jack Ray Brothers, Jenkin Rialto, both of Calif., assignors to said Montigny, by said Brothers and Montigny Company, by said Brothers
Continuation-in-part of Ser. No. 884,672, Dec. 12, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,165
Int. Cl. B01f 7/24
U.S. Cl. 259—8 11 Claims



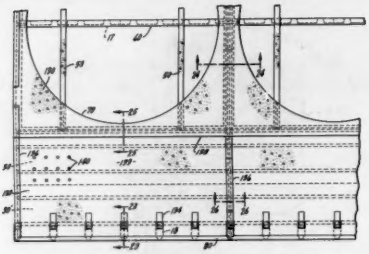
Apparatus for mixing proportionate quantities of a resin and a hardener into a relatively quick-hardening adhesive, and dispensing the adhesive mixture. A pair of motor-driven rotary gear pumps transfer resin and hardener from separate supply chambers to a mixing chamber from which the adhesive mixture is dispensed. One of the embodiments of the apparatus includes a pneumatic drive system for operating the pumps in a pulse-like fashion to dispense a metered quantity of the adhesive mixture. Each of the embodiments includes an improved hot water heating system for maintaining the resin and hardener in semi-fluid states in their respective storage chambers.

3,801,075
MECHANICAL AERATOR
Frank G. Weis, Kansas City, Mo., assignor to Ecodyne Corporation, Chicago, Ill.
Filed July 3, 1972, Ser. No. 268,243
Int. Cl. B01f 7/18
U.S. Cl. 261—91 7 Claims



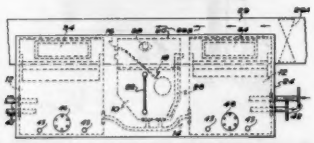
A mechanical aerator for the aeration of a liquid, having an impeller positioned so as to contact the surface of the liquid, the impeller comprising: a shaft rotatable about a substantially vertical axis; and a plurality of backward curved vanes extending outwardly from the shaft, the vanes cuved such that as the impeller rotates about a substantially vertical axis a series of thin film waves emanate spirally outward and upward from the vanes, such that each particle of liquid contained therein moves radially outward from the axis of rotation. The vanes have a portion of increased depth at the area adjacent the shaft so as to gouge a hole of increased depth in the liquid and thereby facilitate rotation of the impeller. The vanes are curved such that as the impeller rotates the liquid is conveyed outward to an area of higher angular velocity.

3,801,076
CONCRETE COOLING TOWER
Donn B. Furlong, San Rafael; Harry W. Gobler, Santa Rosa, both of Calif., and Robert Grotheer, Cincinnati, Ohio, assignors to Ecodyne Corporation, Chicago, Ill.
Filed June 30, 1972, Ser. No. 267,790
Int. Cl. B01f 3/04; B01d 47/12
U.S. Cl. 261—111 13 Claims



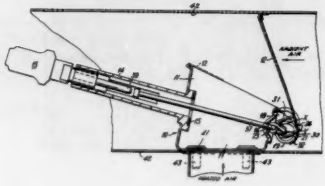
A top deck structure for use in combination with a concrete cooling tower. The top deck includes precast concrete "T" beams extending across the upper ends of the tower transverse wall sections. Precast ledger beams extend longitudinally across the upper ends of the transverse wall sections in a supporting relationship with the innermost longitudinal edges of the "T" beams. Precast concrete connector beams are supported on top of the longitudinal wall sections and a plurality of precast concrete keystone beams extend between the ledger beams associated with facing half cells. Precast fandeck panels are supported between the ledger beams and the connector beams above the keystone beams so as to define a fan stack opening therethrough. A concrete topping is poured-in-place above the "T" beams and fandeck panels in a manner defining a hot water basin thereabove.

3,801,077
HUMIDIFYING APPARATUS
George Pearson, Collingham, Wetherby, England
Continuation-in-part of Ser. No. 824,040, May 13, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 179,832
Claims priority, application Great Britain, May 15, 1968, 23023/68
Int. Cl. B01f 3/04
U.S. Cl. 261—139 2 Claims



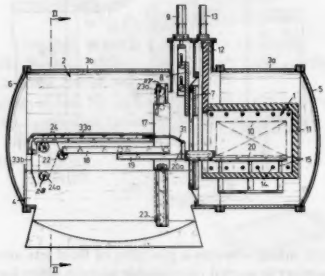
Humidifying apparatus for injecting steam into a pressure duct of an air conditioning system wherein the purity of the air must be maintained comprising a closed steam chamber and a closed water tank coupled to allow flow of water from the tank to the chamber for steaming, a steam outlet from the chamber leading to the duct and a pressure balance opening from the water tank leading to the duct so that the duct pressure is experienced in the steam chamber and water tank so that the apparatus can operate over a wide range of positive and negative pressures but is sealed to prevent ingress of bacteria from the atmosphere surrounding the apparatus, and including a float controlled water feed and an overflow pipe for the water tank said overflow pipe having its upper end open to atmosphere and its lower end below the normal operational level of the tank again to prohibit ingress of bacteria into the apparatus.

3,801,078
THERMOSTATICALLY CONTROLLED VALVE ASSEMBLY
Douglas Graham Denton, Leigh-on-Sea, England, and John Meldrum MacKay, Wishaw, Scotland, assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 28, 1973, Ser. No. 336,595
Int. Cl. F02m 31/00
U.S. Cl. 236—93 9 Claims



A thermostatically controlled valve assembly suitable for use as an inlet air temperature control device of an automobile engine. A thermostat moves a pivotally mounted flap against a main spring as the temperature rises to increase the ratio of ambient air to heated air. In this invention the functions of the flap hinge, the main spring and an override spring are performed by a spring configuration formed from a single piece of spring stock.

3,801,079
CHARGING DEVICE FOR CHARGING AND EMPTYING THE HEATING CHAMBER OF VACUUM QUENCHING FURNACES
Ferdinand Limque, Nitmegen, Netherlands, and Hans Josef Bertrand, Goch, Germany, assignors to Ipsen Industries International Gesellschaft mit beschrankter Haftung, Kleve, Germany
Filed June 2, 1972, Ser. No. 259,295
Claims priority, application Germany, June 7, 1971, 2128158
Int. Cl. C21d 1/62
U.S. Cl. 266—4 A 7 Claims



A charging device for a furnace which has a housing with a charging opening and an oil quenching chamber and a heating chamber. The charging device has a vertically moveable carriage with a support thereon moveable horizontally to convey charges from said opening across said oil quenching chamber to said heating chamber and back. Chains drive the carriage

vertically and the support horizontally and the chains for the support disengages therefrom when the support is over the body of oil in the oil quenching chamber to permit the support and carriage to be moved vertically to treat a charge in the coil.

3,801,080

RADIANT BURNER AND FURNACE FOR TREATING AT HIGH TEMPERATURE

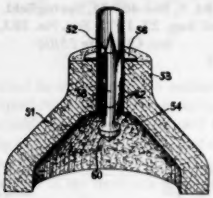
Bernard J. Lemaire, Faumont, France, assignor to Ressorts Du Nord S.A., Paris, France

Filed July 26, 1972, Ser. No. 275,293

Claims priority, application France, Aug. 3, 1971, 71.28372; Apr. 4, 1972, 72.11736

Int. Cl. C21d *1/08*

U.S. Cl. 266—5 R **8 Claims**



Burner heating by the effect of radiation comprising a body of refractory fibre felt through which extends a metal sleeve for supplying a combustible mixture.

A furnace is disclosed which comprises a case of a material containing refractory fibres having a very low thermal conductivity, the case having an inner surface defining a treating chamber. At least one tube extends through the material of the case and is connected to a source of combustible mixture outside the case and forms inside the chamber at least one burner which heats the inner surface defining the chamber.

3,801,081

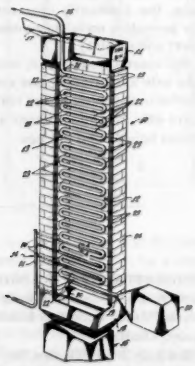
FURNACE FOR SEPARATION OF VOLATILE CONSTITUENTS OF ORES

Philip M. Gardiner, Bishop, Calif., assignor to Jeffrey B. Beaver, Fullerton; Real J. Goulet, Bishop and Julius Zion, Long Beach, all of Calif.; a part interest to each

Filed Aug. 25, 1972, Ser. No. 283,977

Int. Cl. C22b *5/16*

U.S. Cl. 266—17 **10 Claims**



A gravity-flow, mercury ore reduction furnace having a hollow, vertical firebrick housing, an ore-feed hopper on its upper end, a vibratory ore-discharge conveyor on its lower end, an elongated heating element extending upwardly through the housing in a central plane and defining a serpentine passage for fire gases supplied to its lower end, and means for withdrawing mercury vapor from the lower portion of the furnace. In one form, the heating element is a continuous tubular coil, and in a modified form, the lower portion of the element is a sealed box structure of high-temperature sheet material having partitions forming vertically spaced galleries for a serpentine flow of gases through the box structure and into a coil forming the upper portion of the element, some of the partitions being made hollow and used for vapor withdrawal.

3,801,082

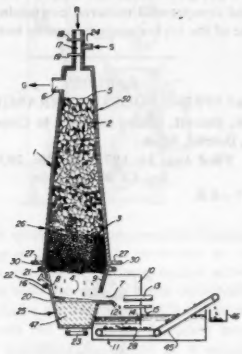
OXYGEN REFUSE CONVERTER

John Erling Anderson, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,530

Int. Cl. F27b *1/10*

U.S. Cl. 266—33 S **9 Claims**



Apparatus for disposing of refuse by converting it to useful gaseous products and inert solid residue comprising a vertical double frusto-pyramidal metal shaft tapering towards progressively smaller cross-sectional areas at both the top and at the base, having vapor-tight inlet means for refuse and oxygen and outlet means for product gas and molten residue.

3,801,083

WEAR-RESISTANT SPOUTS FOR METALLURGICAL VESSELS

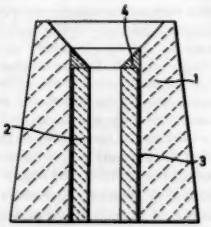
Paul Gerhard Mantey, and Eberhard Knorr, both of Amberg, Germany, assignors to Eisenwerke Gesellschaft, Maximilianshutte m.b.H., Sulzbach Rosenberg, Germany

Filed Dec. 29, 1972, Ser. No. 319,118

Claims priority, application Germany, Dec. 30, 1971, 2165537

Int. Cl. F27d *3/14*

U.S. Cl. 266—38 **10 Claims**



A wear-resistant spout for metallurgical vessles in which a pore-free material which exhibits high resistance to erosion by

the molten contents of the vessel is utilized to line the passageway in said spout, a particularly preferred material is melt-cast corundum.

3,801,084

PROCESS FOR THE PROTECTION OF A TUYERE OF A REFINING CONVERTER

Pierre Leroy, Saint-Germain-en-Laye, and Emile Sprunck, Moyeuvre-Grande, both of France, assignors to Societe Creusot-Loire, Paris, France

Filed Sept. 7, 1972, Ser. No. 286,936

Claims priority, application France, Sept. 21, 1971, 71.33852

Int. Cl. C21c *5/48*

U.S. Cl. 266—41 **9 Claims**

A process of protecting a tuyere of a refining converter having a double or multiple feed of which one, which may be the central feed, is pure oxygen, the process comprising feeding preferably a peripheral conduit with a viscous, a pasty, or powdery and compressed material containing carbon to protect the nose of the tuyere against wear by hot corrosion.

3,801,085

GAS SPRING BOOSTER ARRANGEMENT

Bela Sandor, Detroit, Mich., assignor to General Motors Corporation, Detriot, Mich.

Filed Aug. 24, 1972, Ser. No. 283,531

Int. Cl. B60g *13/06*

U.S. Cl. 267—8 R **3 Claims**

A gas spring includes an elongated cylinder defining an elongated cavity which receives a pressurized gas and a piston slidable between the opposite ends of the cavity to provide a pair of chambers whose volumes vary during this piston movement and whose states of pressure are equalized by gas flow through a restricted passage in the piston. One end of the cylinder includes an aperture in which an elongated connecting rod is sealingly slidable for movement between retracted and extended positions relative to the cylinder. The inner end of the connecting rod is attached to the piston to reduce the area of the piston facing the apertured end of the cylinder and thus provide a differential area between the opposite sides of the piston so that the pressurized gas normally urges the piston toward this end of the cylinder and biases the connecting rod toward the extended position. A booster includes a helical spring that has one of its ends seated against the apertured end of the cylinder and which extends outwardly from the cylinder encircling the outwardly extending portion of the connecting rod. The other end of the helical spring seats against an apertured plate which slidably receives the connecting rod. The outer end of the connecting rod engages the apertured plate during a limited range of movement of the connecting rod adjacent the retracted position. Retraction of the connecting rod within this range of movement compresses the helical spring to aid the gas in biasing the connecting rod toward the extended position. An elongated hollow cover encloses the helical spring with one end of the cover secured to the apertured plate and with the other end of the cover slidable along the cylinder and engageable with an annular flange of the cylinder to limit outward movement of the cover when the connecting rod is extended past the limited range of movement.

3,801,086

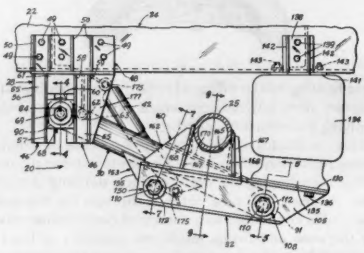
VEHICLE AIR SPRING SUSPENSION ASSEMBLY

John E. Raidel, Rt. 9, Box 400-M, Springfield, Mo.

Filed Aug. 23, 1972, Ser. No. 283,164

Int. Cl. B60g *15/00*

U.S. Cl. 267—67 **21 Claims**



A vehicle air suspension assembly comprising a first beam, means for pivotally mounting the forward end of the first beam to the vehicle chassis, a second beam, means for resiliently connecting the rearward end of the first beam to the rearward end of the second beam, spring means mounted between the rearward end of the second beam and the vehicle chassis, and means for resiliently connecting the forward end of the second beam to the first beam between its ends, whereby the axle load is distributed between the pivotally mounting means, the resiliently connecting means, and the spring means to provide a novel suspension assembly with exceptional comfort and stability.

Inherent in the assembly design is means for allowing for oscillation of the axle as caused by one end of the axle moving up or down relative to the other under various load conditions. Also included are axle mounting means accommodating vehicle axles of various heights and pitches.

3,801,087

HYDROPNEUMATIC IMPACT ABSORPTIVE DEVICE

Seiji Akaike, and Kenichi Maemori, both of Atsugi, Japan, assignors to Nissan Motor Company Limited and Atsugi Motor Parts Company, Limited

Filed July 29, 1971, Ser. No. 167,148

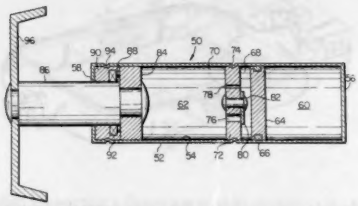
Claims priority, application Japan, Aug. 4, 1970, 45-67686

Int. Cl. F16f *5/00*

U.S. Cl. 207—139 **8 Claims**

An impact absorptive device is disclosed which uses a hydroneumatic spring unit. The spring unit has a gas compart-

ment filled with a gas under pressure and a liquid compartment filled with liquid. The gas and liquid compartments are divided by movable partition means and the liquid compartment is further divided into two liquid chambers which communicate with each other by restricted passage means. The spring unit is connected to a fender through a piston unit which is longitudinally movable in the spring unit. As the



fender is subjected to an impact, the piston unit is forced to retract in the liquid compartment so as to exert a liquid pressure on the movable partition means until the gas compartment is critically contracted. The energy of the impact is thus consumed in the forced contraction of the gas compartment. A typical application of the device is a bumper of an automotive vehicle.

3,801,088

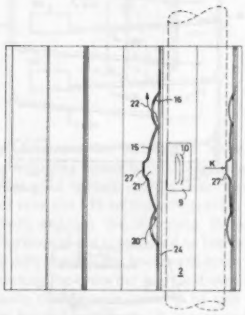
SPACER GRID RESPECTIVELY PLATE SPRING FOR A BUNCH OF CYLINDRICAL ELEMENTS TAKING PART IN A HEAT-EXCHANGING-PROCESS

Gijsbrecht Gerhardus Piepers, Heiloo; Leonard Hendrik Vons; Aart van der Linde, both of Alkmaar, and Eduard Ljbrink, Bergen, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Division of Ser. No. 887,801, Dec. 23, 1969, Pat. No. 3,646,994. This application Apr. 16, 1971, Ser. No. 134,685

Int. Cl. F16f *1/22*

U.S. Cl. 267—164 **4 Claims**



A plate spring for use in a spacer grid for holding a rod-like element against lateral displacement, by exerting a pressure force on the element in a direction normal to the plane of the plate spring, said plate spring having a longitudinal dimension and a transverse dimension within said plane and when in the relaxed state having a bow-shaped bend in one direction in its major middle part for engagement with the rod-like element said spring further having between said bow-shaped bend and each end of the spring an arch extending in the same direction as said bend, at least one end of the spring being formed in at least two longitudinally extending branched parts which are transversely spaced apart.

3,801,089

AUTOMATIC VERTICAL BAND SAWING MACHINE PROVIDED WITH MECHANISM TO ATTENUATE THE RESONANCE BETWEEN THE SAWING BLADE AND THE WORK TABLE

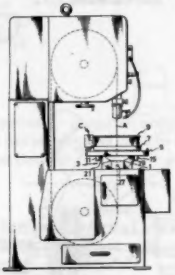
Goro Fukugami, 2104-24, Sohbudai-danchi, Sagamihara-shi, Kanagawa-ken; Chiaki Tamura, 423, Naka-machi, Ono-shi, Hyogo-ken; Hideji Majima, 3385, Zama, Zami-shi, Kanagawa-ken, and Hideo Takahashi, 5-29-11, Nagaski, Toshima-ku, Tokyo, all of Japan

Filed Mar. 17, 1972, Ser. No. 235,631

Claims priority, application Japan, Mar. 19, 1971, 46-15177; Aug. 31, 1971, 46-66310

Int. Cl. B26d *5/20*

U.S. Cl. 83—74 **5 Claims**



This invention relates to the improved technology of a vertical band sawing machine and in particular to vertical band sawing machine capable of inclining and/or setting the work table in relation with the sawing blade universally (i.e. both longitudinally and/or transversely) which comprises providing said machine with the work table including mechanism for free backward travelling by means of a suitable tracking mechanism, mechanism for free transverse traveling and mechanism for free turning in a suitable manner, enabling it to cut the workpiece automatically on the work table along the prescribed model curve by turning the work table by means of said free turning mechanism both clockwise and counterclockwise according to the conrol signal from the mechanism to detect said model curve, and further incorporating mechanism to attenuate the resonance of the work table with the band sawing blade caused by the elastic band sawing blade and the aforesaid free transverse travelling mechanism during the curve-cutting.

3,801,090

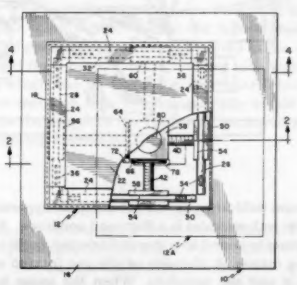
COORDINATE TABLE

William P. Gillen, 175 4th Ave., Chula Vista, Calif.

Filed July 10, 1972, Ser. No. 269,994

Int. Cl. B23q *3/18*

U.S. Cl. 269—60 **8 Claims**



A table providing a work surface is mounted on a supporting base for movement to selected coordinate positions along

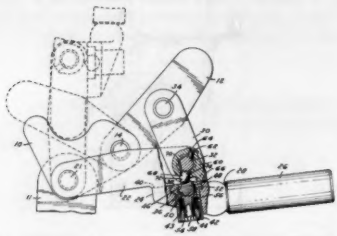
two orthogonal axes. The drive mechanism for the table is fixed in a central position on the base and actuates screw means attached to the table. The entire drive mechanism is enclosed within the table and actuating motors are mounted in the base, the table being supported by orthogonal bars sliding in guide blocks which roll on top of the base for smooth and precise operation.

3,801,091

UNIVERSAL CLAMP WITH ADJUSTABLE RETENTION MEANS

Alexander W. McPherson, Farmington, and Jack J. Sendoykas, St. Clair Shores, both of Mich., assignors to Dover Corporation (De-Sta-Co Division), Detriot, Mich.

Filed Jan. 31, 1972, Ser. No. 222,106
Int. Cl. B25b *5/12*
U.S. Cl. 269—91 **16 Claims**



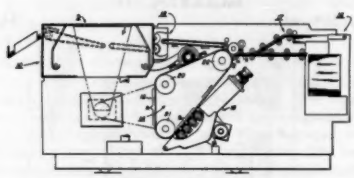
A manually operated toggle type clamp having an adjustable retention means suitable for stopping and holding the clamp arm in a predetermined open position. Optionally when setting up the clamp, adjustable retention means is temporarily positioned for try-out and then welded or otherwise permanently secured for repeated use when the preferred final open position has been determined. In the preferred embodiment the adjustable retention means is substantially enclosed within the clamp mechanism.

3,801,092

VACUUM HOLDDOWN DEVICE FOR MOVING BELTS

William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 102,312, Dec. 29, 1970. This application Oct. 20, 1972, Ser. No. 299,572
Int. Cl. B65h *5/22*
U.S. Cl. 271—197 **3 Claims**



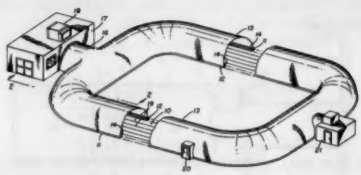
A vacuum holddown device for use in an apparatus employing flexible web material in a flattened condition. A perforated plenum plate is joined to a manifold connectable to a vacuum producing means. A plurality of ribs are formed on the plate between it and the manifold. When the space between the plenum plate and manifold is evacuated the latter is forced against the ribs.

3,801,093

AIR SUPPORTED ENCLOSURE FOR A JOGGING TRACK

Richard M. Jones, III, 164 Rockland Dr., Youngstown, Ohio

Filed Nov. 24, 1972, Ser. No. 309,530
Int. Cl. E04h *3/14;* **E04b** *1/345*
U.S. Cl. 272—3 **9 Claims**



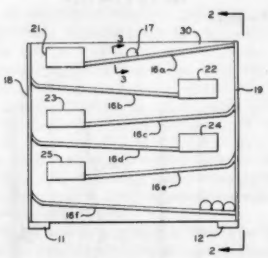
An air supported enclosure for a jogging track consists of an inflatable structure having walls and roof formed of air impervious material adapted to enclose a volume of air under pressure slightly in excess of atmospheric. Pressure sealing access means in one of said walls communicating with a service building and peripheral anchoring means at the lower edge of said walls for sealing said structure against the escape of air, said structure taking the form of a jogging track oval and providing a continuously extending circular enclosure.

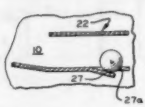
3,801,094

AMUSEMENT DEVICE INCLUDING SPHERICAL BALLS AND TRACK THEREFORE WITH OBSCURED DEPRESSIONS THEREIN

Mahlon L. Treaster, R.D. No. 2, Harpursville, N.Y.

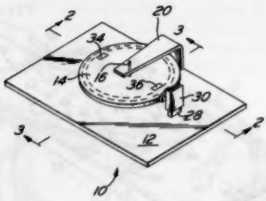
Filed Feb. 16, 1972, Ser. No. 226,728
Int. Cl. A63j *5/00;* **A63h** *33/00*
U.S. Cl. 272—8 R **7 Claims**





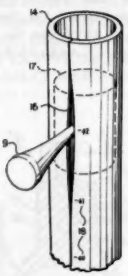
Various forms of game toys comprise a generally descending track down which a plurality of differently-colored balls or toy cars roll. Rises spaced along the descending track allow balls or cars to stop and remain at certain stations where they are hidden from view in a tunnel until they are struck by later-released balls or cars which then remain stopped. Thus a ball or car rolling into a tunnel ejects a differently-colored ball or car from the tunnel, creating an illusion that the ball or car changed color as it rolled through the tunnel.

3,801,095
MAGNETIC AMUSEMENT DEVICE
Joseph Woron, 2813 Asbury Ave., Cornwells Heights, Pa.
Filed June 4, 1973, Ser. No. 367,033
Int. Cl. A63f 9/00
U.S. Cl. 273—1 M 10 Claims



A disc supporting a first magnet at its periphery is caused to revolve by magnetic induction due to movement of a second magnet adjacent but spaced from the periphery of the disc. The second magnet is mounted for reciprocal movement in a direction generally parallel to the axis of rotation of said disc.

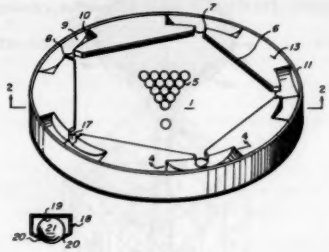
3,801,096
LIMBO GAME APPARATUS
Raymond F. Miller, 681 Doverlee, Santa Maria, Calif.
Filed June 21, 1973, Ser. No. 372,210
Int. Cl. A63b 1/00
U.S. Cl. 273—1 R 8 Claims



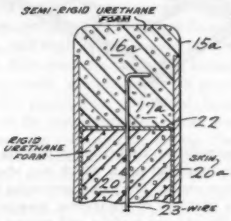
The upright supports for holding a horizontal bar are formed of plastic tubing which is split lengthwise, and a piece of doweling is inserted in each upright tube. The doweling has an O.D. greater than the I.D. of the split tubing, and the plastic tubing frictionally engages the doweling. Projecting through each slit is a horizontal pin connected to the doweling. These two horizontal pins support the horizontal cross bar. The game is played by starting the cross bar high and then steadily lowering it by manually sliding each dowel in its split tube, until the players can no longer pass under it, supported by their feet alone.

3,801,097
ROTATABLE POOL TABLE WITH BALL BEARING BRAKING STRUCTURE
Vivian S. Van Derhei, 1229 S. Casino Center, Las Vegas, Nev.
Filed Sept. 21, 1972, Ser. No. 291,017
Int. Cl. A63d 15/00
U.S. Cl. 273—3 B 1 Claim

A rotatable, round pool table pivoted at the center on a spindle and supported by a plurality of ball bearings which because of a three-point housing support of the balls held therein also provide a braking action against a fixed base. The playing surface of the table is pentagonally shaped, flat and interrupted by depressed, irregular shaped pockets. Additionally, the table has an elevated edge to form the rear enclosure for each of the pockets.



3,801,098
METAL BASEBALL BAT
Donald Gildemeister, Toledo, Ohio, assignor to N L Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 180,555, Sept. 15, 1971, Pat. No. 3,727,295. This application Jan. 17, 1972, Ser. No. 218,155
Int. Cl. A63b 59/06
U.S. Cl. 273—72 A 4 Claims

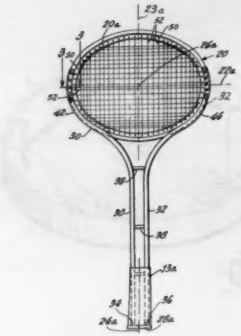


A foam filled metal bat is disclosed. The bat comprises a die cast, ball-bat shaped hollow tube of substantially uniform wall thickness having an integrally cast knob over an end of a handle portion. The end of a club portion of the tube is open. A rigid urethane foam extends within the tube from the knob end up to and contiguous with a cap inserted in the open club end. The rigid foam forms a bond with the tube walls and the cap portion which may be a semi-rigid urethane foam or a plug of rubber or metal. A wire extending axially within the rigid foam extends the length of the bat and is anchored at its ends adjacent the integral knob and cap.

3,801,099
TENNIS RACQUET
John C. Lair, 187 N. Mountain Trail, Sierra Madre, Calif.
Filed June 23, 1971, Ser. No. 155,902
Int. Cl. A63b 49/02, 49/04
U.S. Cl. 273—73 C 1 Claim

An improved tennis racquet constructed of magnesium, beryllium or other metal with a low ratio of weight to stiffness

and strength wherein the elliptical head of the racquet is disposed so that the long axis of the ellipse is transverse to the



axis of the racquet handle, thereby to increase the rotational moment of inertia about the longitudinal axis of the racquet.

3,801,100

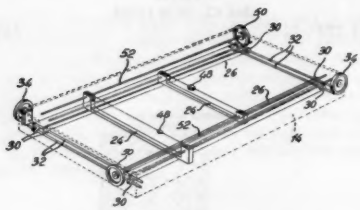
MAGNETIC HOCKEY GAME

Robert Lebrun, 2231 rue Augier, Montreal, Quebec, Canada

Filed Nov. 1, 1972, Ser. No. 302,869

Int. Cl. A63f *7/06*

U.S. Cl. 273—85 F **9 Claims**



A game apparatus comprising a playing surface made of non-magnetic material upon which are placed a plurality of magnetic game pieces. The game apparatus is surrounded by a frame and a plurality of transverse members are positioned underneath the playing surface and moved in both directions along the longitudinal axis thereof. A magnet is associated with each one of the transverse members and cables and pulleys are provided for moving the transverse members longitudinally of the playing surface and for moving the magnets transversely of the playing surface. At least one of the transverse members is mounted for movement within other transverse members so that each transverse member can travel the full length of the playing surface. The above arrangement permits each magnet to move one of the game pieces placed on the playing surface longitudinaly and transversely on such playing surface.

3,801,101

PORTABLE SIMULATED GOLF GAME

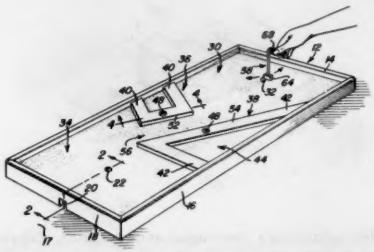
Theodore H. Greenberg, Bradford, Pa., assignor to Henry Graff and Richard Fishkin, Bradford, Pa., part interest to each

Filed Nov. 22, 1971, Ser. No. 200,881

Int. Cl. A63f *7/06*

U.S. Cl. 273—87.2 **3 Claims**

A portable table-type golf game construction comparable with miniature golf and embodying a cloth-covered panel which constitutes a game board and whose marginal edges are encompassed by an attached complemental frame, that is, an adaptation having an upstanding ball confining rim and a depending skirt capable of self standing use atop a support table or the like. The playing surface represents a fairway. The proximal end provides a starting tee for the golf ball. The



distal or scoring end is provided with a ball receiving trough-equipped cup. The median portion therebetween is provided with removable inserts which constitute hazards and are changeable. A miniaturized putter is equipped at an upper end with an anti-slipping grip which is caught hold of by the thumb and fingers and is rolled and rocked to propel the golf ball.

3,801,102

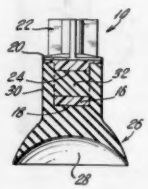
SAFETY DART AND METHOD FOR MANUFACTURING THE SAME

Raymond J. Lohr, Erie, and John B. Quigley, Girard, both of Pa., assignors to Louis Marx & Co., Inc., Stamford, Conn.

Filed Jan. 7, 1972, Ser. No. 216,218

Int. Cl. A63b *65/02*

U.S. Cl. 273—106.5 A **2 Claims**



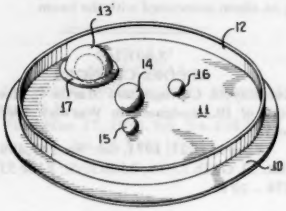
A safety dart and method for manufacturing the same. The safety dart includes an elongated shaft having an elongated free end portion terminating in an end surface of the shaft and formed with a transverse opening spaced from the latter end surface. A suction cup is fixed to the shaft at the free end portion of the latter, surrounding this free end portion and having part of the material of the suction cup itself extending through and filling the transverse opening to achieve a strong mechanical connection between the suction cup and the shaft. Preferably the materials used for the suction cup and shaft are such that there will be a surface bond also between the suction cup and the shaft. The shaft is first molded and then the shaft is placed in a suction cup mold with the free end portion of the shaft together with the transverse opening in this free end portion situated in the hollow interior of the suction-cup mold. Then the suction cup itself is molded around this free end portion of the shaft so that the material of the suction cup will flow through and fill the transverse opening of the shaft. The shaft is preferably made of a solid body of high impact styrene and the suction cup is preferably made of resilient yieldable plastic which has a styrene butadiene polymer base.

3,801,103

GAME EMPLOYING TILTABLE GAME BOARD WITH AN INVERTED CUP AND TWO BALLS

Jose Luis Pemjean Mazuela, 5 Jalan Labat Daun, Singapore 28, Chile

Filed May 5, 1972, Ser. No. 250,788
Int. Cl. A63f 7/00
U.S. Cl. 273—117 7 Claims



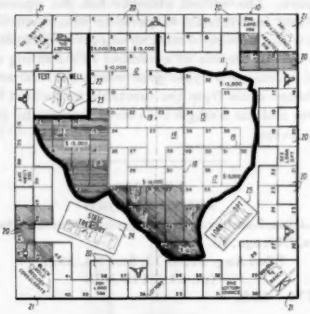
A game of skill employs a rimmed flat game board on which an inverted cup and at least two balls are free to move as the board is tilted. The game begins with one ball inside the inverted cup. The object of the game is to tilt the board to drive the cup against the board rim with sufficient force to cause one side of the cup to lift. While the cup is thus partially lifted the second ball must be rolled inside the cup.

3,801,104

BOARD GAME APPARATUS

Ronald G. Potts, 22 Maple Ln., Galveston, Tex., and Clinton E. Word, 1612 Travis Ct., Lamarque, Tex.

Filed July 13, 1972, Ser. No. 271,404
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AE 8 Claims



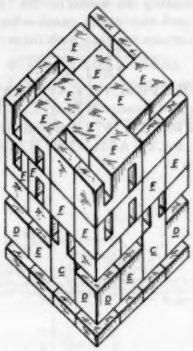
A competitive game of skill and chance is played by two or more players. The broad aspect of the game features investment in land and prospecting for oil with associated economic activity. The apparatus employed embodies a hollow game board with a defined chamber in which magnets may be arranged in a concealed random fashion. Coacting magnetic oil prospecting and indicator devices are employed by the players in an interesting and amusing manner and with great realism. In another embodiment, the prospecting device arenot magnetic but have movable shafts which pass through openings in the board and may engage one of the magnets. The game also features a wide variety of simulated business transactions and options which test the skill and wisdom of players.

3,801,105

INTERLOCKING FIGURES FOR A CHESS SET

Juan Gomez Soubrier, Madrid, Spain, assignor to Regalas, Promaciones Gervicios, S.A., Madrid, Spain

Filed Feb. 20, 1973, Ser. No. 334,081
Claims priority, application Spain, Apr. 6, 1972, 179078
Int. Cl. A63f 3/02, 9/12
U.S. Cl. 273—137 R 1 Claim



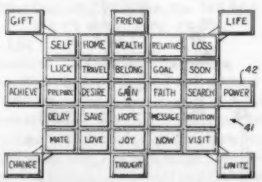
Interlocking figures for a chess set, which comprises six component basic figures each having a general shape of a quadrangular prism and each being of a different configuration including gaps and projections, respectively, thereby providing a male-female coupling between adjacent figures. All figures form in assembled position a final cubical body, which defines a lower part and an upper part. The lower part of the body includes two pieces constituting kings and two pieces constituting queens, the two kings and the two queens having parallel side faces to form a square at their base, and being coupled together. Each of the kings faces the other in opposite vertices, and each of the queens faces the other in opposite vertices, four pieces constituting bishops and four pieces constituting rooks, are provided. All pieces are fitted into the faces of the square four additional pieces constitute knights and each of the last mentioned pieces are disposed at the vertices between the rook and the bishop. The upper part includes pieces to constitute pawns and has two floors joined to each other on horizontal faces thereof and forms a prismatic block joined to the lower part by means of projections and gaps, respectively, disposed in opposite faces of the parts.

3,801,106

BOARD AND CARDS GAME

Charlotte M. Milton, 361 Laidley St., San Francisco, Calif.

Filed Nov. 13, 1972, Ser. No. 305,805
Int. Cl. A63f 9/18
U.S. Cl. 273—161 1 Claim



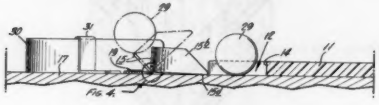
A board is divided into a regular pattern of rectangular spaces, each consecutively serially numbered, space No. 1

being in the center of the pattern and the other numbers proceeding out from the center. In a preferred form, there are 33 spaces — five rows and five columns with outward extended spaces at each corner and at the middle of each row and column. Cards corresponding in number to the spaces are marked with different words, one card having the word "self." Preferably, the word bearing sides of the cards are different colors. After shuffling, the cards are placed face up on the numbers on the board in order. Questions of certain types may be answered by reading the words on the "self" card, the card on space No. 1 and two other cards which happen to have been placed in a certain relation with these two cards.

3,801,107
GOLF PRACTICE APPARATUS

Frank V. Martin, 214 Roosevelt Blvd. S., Brigantine, N.J.

Filed Dec. 14, 1972, Ser. No. 315,105
Int. Cl. A63b *67/02, 57/00*
U.S. Cl. 273—176 F **11 Claims**

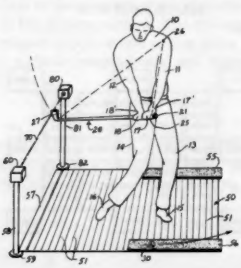


A cup-like element is provided to enable a golfer to practice putting by directing golf balls toward the element. A pair of the elements may be mounted at opposite ends of an elongated mat of resilient material which is laid on a floor to simulate a golf green. Each cup element has an upstanding curved portion which is juxtaposed with a curved notch in the narrow end of the mat to simulate a golf hole or cup. The cup element is of one-piece plastic construction and has an integral mounting tab which is releasably fastened to the floor by means of adhesive tape. The tab is connected to the curved portion of the cup element by means of a narrow web of material which provides both a hinge and spaced stop surfaces to limit pivotal movement of the curved portion about the tab. When the cup is struck by a ball having a velocity which would normally cause the ball to overshoot a golf hole if the ball were in actual play on a golf green, the curved portion pivots about the tab and permits the ball to roll over the upper edge of the cup element. A backstop extends widthwise of the mat behind each cup element to catch balls which pass over or around the cup element. A golfer practices putting by standing on the widthwise margins of the mat and putting balls toward one or the other cups.

3,801,108
GOLFER'S WRIST-RELEASE DETECTOR

Gerald F. Murray, 45-15 42nd St., Sunnyside, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,426
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **5 Claims**

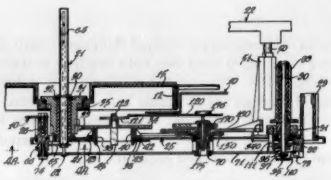


A device for measuring relatively, the point at which a golfer releases the cock of his wrists in his downswing, so that judgement can be made whether his release is premature thus having an adverse effect on his swing. It is a device for use by golfers in training to detect wrist movement through relative measurement of swing radius. The device may include a mat having indicia thereon for properly positioning a golfer relative one or more horizontally extending light beams adapted to function as detectors. If the golfer keeps his wrists fully cocked until after the clubhead passes a selected point, the radius of the circular path of the clubhead will remain small enough for the clubhead to pass inside a light beam, without triggering an alarm associated with the beam.

3,801,109
RECORD CHANGER

George Kolomayets, Chicago, and Martin C. Reed, Lake Zurich, both of Ill., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed May 27, 1971, Ser. No. 147,499
Int. Cl. G11b *17/16;* **B32b** *3/10;* **F16c** *33/28*
U.S. Cl. 274—10 R **16 Claims**

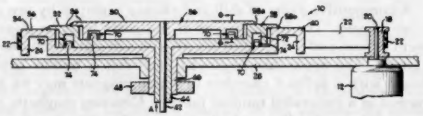


A record changer having a modular construction with a substantial reduction in the number of parts required for all of the normal record changer functions and having a mounting base with integrally-molded plastic parts defining various bushings, studs and other mountings for moving components of the changer. A common locating or reference point on the mounting base for a number of operative interengaging levers minimizes vertical and horizontal tolerances whereby the operating levers can be made of relatively inexpensively molded parts. The record changer has the operating parts designed and interrelated to perform maximum number of functions with a minimum number of parts which are easily assembled without the use of a number of mounting screws for the parts, including a cycle gear which derives power for a record change cycle from the turntable and which operates a rocker arm and has a single cam for powering the plurality of operating levers.

3,801,110
SOUND RECORD

Gunars Licitis, Lombard, Ill., assignor to Marvin Glass and Associates, Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,377
Int. Cl. G11b *3/78*
U.S. Cl. 274—42 R **9 Claims**



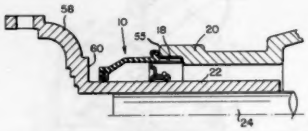
Disclosed is a novel sound record having a plurality of relatively movable parts with sound track portions on each part. The record parts are locked together for playing purposes but may be released to permit adjustment of the relative positions

of the record parts and thereby the sound track portions thereon, to thereby adjust or change the sound tracks which extend over the record parts. In one exemplary embodiment, the record is disc shaped and the relatively adjustable record parts comprise annular concentric portions of the record, with the sound tracks extending over the record parts between the outer periphery and the center of the record. In another embodiment of the invention, the record is of the cylindrical type and the relatively adjustable record parts comprise axially disposed and relatively rotatable cylindrical sections of the record.

3,801,111
SHAFT SEAL

Edward J. Messenger, Gastonia, N.C., assignor to Garlock, Inc., Palmyra, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,064
Int. Cl. F16j *15/38*
U.S. Cl. 277—58 **8 Claims**

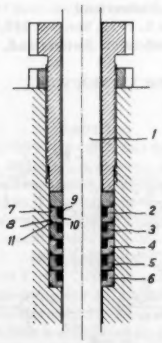


A seal for use between a housing bore and a rotating and reciprocating shaft and including an annular metal case supporting an elastomeric sealing member in rotary contact with the shaft and also supporting an elongated, shaft-encircling, boot-like, elastomeric collapsible sleeve. The proximal end of the sleeve includes an enlarged bead and the metal case includes an annular groove in which the bead is mechanically crimped. The bead-retaining portion of the metal case is located axially and radially outward from a cylindrical bore-fitting portion of the metal case.

3,801,112
GLAND PACKINGS

Eugene Dumazet, Sainte Catherine les Aaras, France, assignor to Ethylene-Plastique, Courbevoie, France

Filed May 11, 1971, Ser. No. 142,138
Claims priority, application France, May 13, 1970, 70.17516
Int. Cl. B65d *53/02*
U.S. Cl. 277—124 **4 Claims**

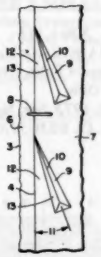


A gland packing especially for use in a valve having a rotatable or axial movable spindle in which the packing is constituted by a series or stack of separate or independent packing sections. Each section consists of a dished ring, a washer packing, a spacer ring and a toric ring. The dished ring at its bottom and outer edge is provided with a 45° chamfer. The packing washer has an outer diameter equal to the internal diameter of the dished ring and an internal diameter equal to the diameter of the movable spindle and is also formed on its bottom surface with a V-notch into which the spacer ring can engage for expansion purposes. The toric ring is housed in the chamfer of the dished ring.

3,801,113
ROTARY SHAFT SEAL

Daniel B. Jackson, Lexington, Ky., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 18, 1971, Ser. No. 199,925
Int. Cl. F16j *15/32*
U.S. Cl. 277—134 **2 Claims**



A shaft seal having converging frusto-conical faces defining an annular sealing edge for contacting a rotatable shaft and thereby preventing leakage of oil from the oil side of the sealing edge to the atmospheric side of the sealing edge, the frusto-conical face on the atmospheric side of the sealing edge being formed with oblique pumping ribs having helical crests lying on a cylinder of substantially the same diameter as the sealing edge, said pumping ribs being operative to sweep oil leakage past the sealing edge back to the oil side. Preferably the pumping ribs are miniscule in size so that they will wear away and disappear during a fraction of the useful life of the seal when the sealing edge has worn itself to a leak-proof fit on the shaft to thus eliminate, at a predetermined wear-in point, the pumping action of such ribs so that dirt and dust is not carried from the atmospheric side to the oil side.

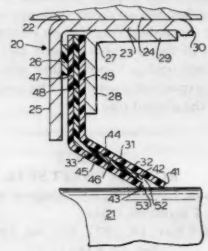
3,801,114
HYDRODYNAMIC SHAFT SEAL OF THE TYPE HAVING A SERIES OF FLAT ANNULAR WASHERS

Gustavus A. Bentley, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Oct. 10, 1972, Ser. No. 295,964
Int. Cl. F16j *15/32, 15/40*
U.S. Cl. 277—134 **14 Claims**

Three resilient annular washers, such as polytetrafluoroethylene, are clamped into a metal case, either before or after they have been pre-formed to provide substantially frustoconical inner portions, the inner peripheries of the pre-formed washers being substantially smaller than the outer periphery of the shaft they are to engage. The first and third washers, one on the oil side of the seal and the other on the air side, respectively, have circular inner peripheries, at least the first washer providing a static seal against the shaft. A second washer, in between the other two washers, provides a non-circular inner periphery with some portions out of contact with

the shaft. Pressures and pressure gradients causing hydrodynamic action are generated in the oil film at normal

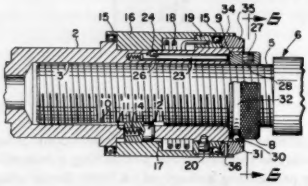


shaft speeds, as a result of the motion of the oil caused by adhesion to the rotating shaft through constantly changing spaces.

3,801,115
QUICK CHANGE TOOL HOLDER

Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Feb. 9, 1973, Ser. No. 331,277
Int. Cl. B23b *31/04*
U.S. Cl. 279—81 **13 Claims**



A quick change tool holder characterized in that a socket member secured to a machine tool spindle or formed as a part thereof has a bore in which the shank of a tool holder is nonrotatably telescoped and in that the socket member has lock means automatically operative to lock the tool holder in the socket member when the tool holder is inserted to predetermiend position in the socket member as determined by an adjustable lock nut on the tool holder shank; said lock nut being additionally locked to and centered with respect to the socket member.

3,801,116
PLASTIC SKI

Wolfgang Benner, Landsiedlerstrasse, 7184 Kirchberg, Jagst, Germany

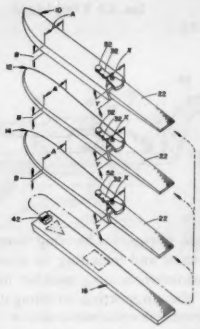
Filed Apr. 29, 1971, Ser. No. 138,612
Claims priority, application Germany, June 4, 1970, 2027370
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **17 Claims**

A plastic ski having a core formed generally in the shape of a ski and upper and lower cover layers on opposite sides of the core. A surface liner is positioned on the upper cover layer and a sole liner on the lower cover layer. Metallic edge members are placed along the edge of the ski between the layers and liners. The core, layers, liners and edges may be appropriately provided with corresponding ridges and recesses for interlocking the members together and forming a composite cross section having closed surfaces on all sides. With the possible exception of the edge members, the various elements are made of plastic material.

3,801,117
SKI ENSEMBLE

Howard H. Pierce, Mt. Vernon Country Club Pl., Lookout Mountain, Colo.

Filed Nov. 9, 1971, Ser. No. 197,047
Int. Cl. A63c *5/02*
U.S. Cl. 280—11.13 K **9 Claims**

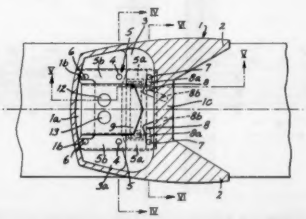


A ski ensemble comprises a pair of ski tails upon which bindings are mounted and three pairs of ski tips, each pair of ski tips having different physical characteristics such as ski engaging surface area and flexibility. Each of the pairs of ski tips are selectively connectable to the pair of ski tails in order to assemble a pair of skis which are most appropriate for a particular snow condition. The ski tails and tips are connected by a double cam arrangement whereby the parts are cammed into locking and unlocking relationships. A convenient carrying case is provided to render the ensemble convenient for transporting and storage.

3,801,118
RELEASABLE SKI BINDING

Francois Droz, La-Chaux-de-Fonds, Switzerland, assignor to Gertsch AG, Zurich, Switzerland

Filed June 5, 1972, Ser. No. 259,590
Claims priority, application Switzerland, June 10, 1971, 8593/71
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T **8 Claims**



Releasable ski binding as applied to the front jaw unit of a ski binding, a pair of centrally pivoted, spring loaded, levers

are held normally parallel to the direction of travel of the ski and cam followers in the end of said levers tend to hold the jaw in normal boot engaging position. Sideward thrust on the boot first tends to translate the jaw sidewardly against the spring pressure applied to said levers and if said sideward thrust is sufficient it tends to rotate the jaw against said spring pressure. The levers each engage the jaw at each of their respective ends in such a manner that they tend to move from the above-mentioned mutually parallel position into a position converging rearwardly with respect to the direction of travel of the ski and form an acute angle with respect to the center line of the ski.

3,801,119

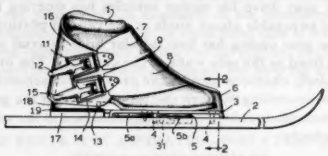
SAFETY SKI BINDING

Jules E. Andre, 73 Essex Ave., Montclair, N.J.

Filed June 15, 1972, Ser. No. 263,184

Int. Cl. A63c *9/81*

U.S. Cl. 280—11.35 K **20 Claims**



A ski binding for releasably retaining a ski boot on a ski including a sole plate mountable on, and slightly spaced apart from the upper surface of a ski, a ski boot engaging member including a release plate insertable between the sole plate and the upper surface of the ski to retain a ski boot in position on the sole plate, and retaining members for engaging appropriate edge contours of the release plate to prevent the release plate from moving in the lateral or longitudinal directions but to allow the release plate to pivot about a predetermined pivot point to release the ski boot engaging member from the ski. The ski boot engaging member may be in the form of a rigid or semi-rigid shell which engages the medial or "inside" lateral surface of the exterior of the ski boot and extends around the lateral "outside" surface of the heel to provide a portion of the necessary support for the skier's heel and ankle and thus allow the skier to wear a lighter, softer, more comfortable and inexpensive ski boot. The ski boot engaging shell may be canted outward to provide improved control of the ski edges. A heel block having a grooved pattern which mates with complementary grooves on the heel of the ski boot may be provided to afford increased control of the ski.

3,801,120

SUPPORTING DEVICE OF A SKI SAFETY BINDING

Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH

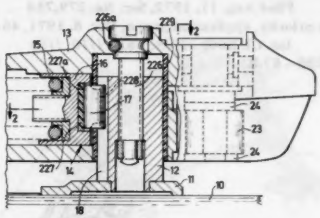
Filed Jan. 11, 1972, Ser. No. 216,998

Claims priority, application Germany, Jan. 14, 1971, 2101581

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **18 Claims**

A releasable supporting device of a ski safety binding, especially a front jaw, comprising a locking element in the form of a rolling element which is supported on a surface consisting of a plastic, for example, of Teflon or the like, which has a low coefficient of friction. Furthermore, the supporting element, for example, the front jaw, may be rotatably mounted on a pivot pin and between these parts a bushing of a similar plastic may be interposed. The supporting element may be further provided with rollers for centrally supporting the front end of



a ski boot and for reducing the friction between the boot and this element when the latter is being released from the boot.

3,801,121

ADJUSTMENT DEVICE FOR SAFETY SKI BINDING

Robert Mimeur, Sallanches, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France

Filed Nov. 10, 1971, Ser. No. 197,441

Claims priority, application France, Nov. 16, 1970, 70.41014

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **7 Claims**

The device for adjusting the longitudinal position of a boot holding device in a safety ski binding comprises means for adjusting at any time the distance between the toe-end and heel-end boot holding means of the binding, and also for momentary compensating the variations in said distance when running on concave surface portions.

3,801,122

LOUNGE CHAIR HAVING MOBILE BASE

Edwin J. Shoemaker; Edwin G. Gensler, and David B. White, all of Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed Jan. 12, 1973, Ser. No. 323,137

Int. Cl. B62d *21/14*

U.S. Cl. 280—43.24 **10 Claims**

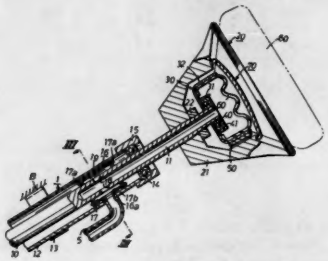
The base for a rockable lounge chair has wheels at the front end and pads and casters at the rear end. Lever means is employed at the rear end for raising the chair from the pads onto the casters which permits the occupant or other persons to move the chair to another location. When the lever is released, the chair is maintained in the new location by the pads thereon.

3,801,123

IMPACT ENERGY ABSORBING APPARATUS

Arata Jira, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabueshiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Aug. 11, 1972, Ser. No. 279,754
Claims priority, application Japan, Dec. 8, 1971, 46-99296
Int. Cl. B60r 21/08; B62d 1/10, 1/16
U.S. Cl. 280—87 R 9 Claims



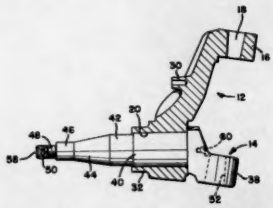
Disclosed herein is an impact energy absorbing apparatus of the type which includes an inflatable bag assembly confined within the steering wheel of a vehicle. The inflatable bag assembly comprises a container rotatably mounted on the top end of a steering shaft within the steering wheel so as to be conditioned to a given position independently of steering wheel rotation by way of an eccentric load and an inflatable bag confined within the container in hermetical connection with an external pressure source. A pressure communication device for leading pressurized fluid from the pressure source into the bag comprises a conduit having one end thereof connected to the periphery of a column tube surrounding the steering shaft and the other end thereof connected to the pressure source, an annular sealing device interposed between the periphery of the shaft and the inner circumference of the column tube to hermetically connect the opening of the conduit with an axial passageway within the steering shaft, the passageway having one end thereof open into the bag and the other end thereof closed.

3,801,124

KNUCKLE ASSEMBLY

Carlos P. Afanador, Centerville, and Richard L. Jones, West Carrolton, both of Ohio, assignors to The Dayton-Walter Corporation, Dayton, Ohio

Filed Oct. 13, 1972, Ser. No. 297,222
Int. Cl. B62d 7/06
U.S. Cl. 280—93 8 Claims



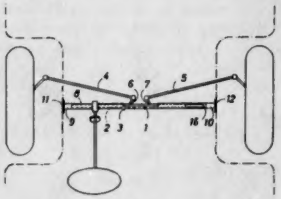
A knuckle assembly in which the upper knuckle, steering arm and brake rails are formed as a one piece casting and the spindle and lower knuckle are formed as in integral forging. The spindle is then shrink fitted into a spindle opening machined in the casting with the lower knuckle positioned correctly relative to the upper knuckle and then finished to receive a lower ball joint.

3,801,125

GEAR DRIVE FOR MOTOR VEHICLES

Adolf Gotzenberger, and Manfred Schneeweiss, both of Ingolstadt, Germany, assignors to Audi nsu Auto Union Aktiengesellschaft, Postfach, Germany

Filed Apr. 5, 1971, Ser. No. 131,009
Int. Cl. B62d 3/12
U.S. Cl. 280—96 5 Claims



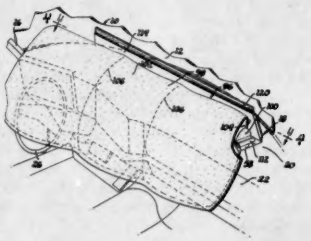
A rack gear drive for motor vehicles has steering tie rods which are swingable about joints at the central portion of the rack. The gear casing has two tubular ends coaxial with the rack and fixed to the side walls of the car body. The invention is particularly characterized by the provision of separate holding screws extending through the tubular ends of the gear casing and through openings in brackets attached to the side walls of the car body.

3,801,126

OCCUPANT RESTRAINT SYSTEM

John W. Knight, IV, Mount Clemens, and Carl M. Savage, Jr., Milford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 19, 1972, Ser. No. 255,026
Int. Cl. B60r 21/02
U.S. Cl. 280—150 AB 5 Claims



An occupant restraint system for a vehicle body includes a manifold provided by an elongated shallow trough having flanged walls which define an opening in general alignment with an elongated opening in the upper portion of the instrument panel adjacent the windshield. An oval-shape slotted diffuser seats on the base wall of the trough and is bolted through the trough to brackets on the cowl structure of the body to mount the trough and diffuser in place. One end of the diffuser is closed and the other end communicates with a source of pressure fluid such as a pressure vessel or gas generator. An occupant restraint cushion is of T cross section and includes an elongated tapered umbilical portion having one open side thereof receiving the opening of the trough and secured to the flanged walls thereof. An elongated pillow portion of the cushion communicates with the other open side of the umbilical portion and extends transversely of the umbilical portion. The pillow portion extends peripherally beyond the umbilical portion on all sides. When the cushion is in stored position, it

is rolled upon itself and received within the trough. A cover for the opening in the instrument panel has flanges releasably clamped between the flanged walls of the trough and the upper portion of the instrument panel. One or more valves in the walls of the trough close openings which communicate with the interior of the vehicle or with ambient atmosphere. The trough brackets, additional brackets from the cowl structure, and tie bars support a lower knee panel which extends transversely of the vehicle underneath the instrument panel. The knee panel includes a perforated steel base covered with semi-rigid resilient material and an outer decorative covering.

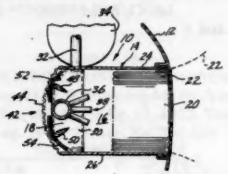
When the source of pressure fluid is communicated with the diffuser, the diffuser expands from oval shape toward a round shape and relocates the slots during such change in shape. The pressure fluid flows from the diffuser into the trough and then into the cushion to inflate the cushion. The umbilical portion is projected rearwardly and generally upwardly of the body through the opening in the upper portion of the instrument panel and is located between the windshield and such upper portion. The pillow portion is erected generally vertically of the body rearwardly of the frontal portion of the instrument panel and of the steering wheel. The tapered umbilical portion locates the pillow portion angularly of the frontal portion of the instrument panel so that its right-hand side is located adjacent the right-hand side of the frontal portion of the instrument panel and its left-hand side clears the steering wheel.

3,801,127

CRASH RESTRAINT ASPIRATING INFLATION SYSTEM WITH CANTED NOZZLES

Lincoln B. Katter, Lynnwood, and Lyle D. Galbraith, Redmond, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed June 14, 1971, Ser. No. 152,894
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **16 Claims**



A crash restraint device for an automobile comprising a box-like frame having a substantially closed sidewall and front and rear openings, an inflatable bag mounted at the rear opening; a plurality of high velocity aspirating jet units placed within said frame upstream of the bag. There is a single manifold tube extending across the box-like frame and three sets of individual jet units disposed in a diverging downstream pattern so as to provide a plurality of diverging downstream aspirating jet streams.

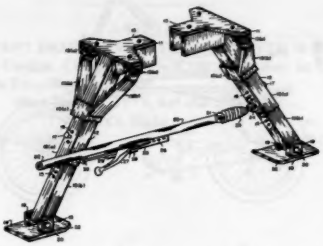
3,801,128

TRAILER STABILIZER

Robert R. Herndon, 207 S. Mtn. St., Smithville, Tenn.

Continuation-in-part of Ser. No. 103,784, Jan. 4, 1971, Pat. No. 3,690,694. This application June 7, 1972, Ser. No. 260,656
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **9 Claims**

A pair of extensible leveling and stabilizing legs are connected pivotally to the underside of a trailer, the legs can be raised from their ground engaging position to a retracted position, in the ground engaging position the legs extend downward to the ground in an outward direction transverse to the longitudinal axis of the trailer. Force means are provided which tend to move the legs toward each other and thus continuously maintain stabilizng and leveling contact of the



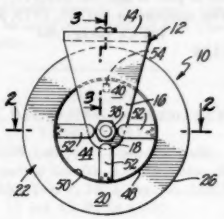
ground engaging portion of the legs with the ground. The force means can also be used to maintain the legs in a raised and retracted position.

3,801,129

ROLLER STRUCTURES WITH THREAD GUARDS

Bernard Kotzin, Jr., 7411 Flight Ave., Los Angeles, Calif.

Filed Dec. 11, 1972, Ser. No. 313,782
Int. Cl. B60s *1/68*
U.S. Cl. 280—158 R **7 Claims**



It is well known that the operation of caster wheels or rollers is frequently impeded by the accumulation of threads between these rollers and a bifurcated support or horn normally used to support them. Such interference can be prevented and/or minimized through the use of guard structures on each of the sides of the roller. Such structures should be formed so as to have outer edges fitting in circular recesses in the sides of the wheel. Such a guard structure should, also, be formed so as to extend from such a recess to the surfaces of the legs of the horn remote from the wheel. Preferably the guard structure also includes a hook extending between it and such legs in the areas where the legs straddle the wheel.

3,801,130

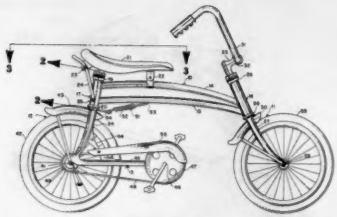
BICYCLE WITH PIVOTABLE REAR WHEEL

Ralph A. Belden, Cascade Locks, Oreg., assignor to Ralph A. Belden; Philip P. Brasseur, and Eugene V. H. Brasseur, all of Spokane, Wash.; a part interest to each

Continuation of Ser. No. 74,688, Sept. 23, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 291,953
Int. Cl. B62k *21/10, 25/00*
U.S. Cl. 280—240 **3 Claims**

A two wheeled, rider propelled vehicle having both wheels pivotably mounted upon a medial principal frame. The pivotable rear wheel frame supports pedal mechanism propelling the rear wheel and may be steered by the feet of the user. Mechanical biasing means communicate between the pivotable rear wheel frame and main frame to bias motion and a

latching mechanism allows fixed positioning of the two members. A vertically adjustable seat is fixedly carried by the principal frame and the forward portion of the vehicle provides a traditional manually steerable, pivotably mounted front wheel frame.



3,801,131

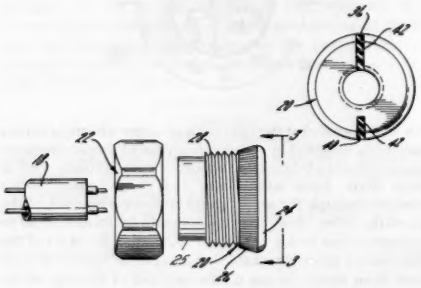
SEALED ELECTRICAL CONNECTOR FOR SECURING CONDUITS TO JUNCTION BOXES

Arthur L. Appleton, c/o Appleton Electric Company, 1701 Wellington Ave., Northbrook, Ill.

Continuation-in-part of Ser. No. 280,515, Aug. 14, 1972, abandoned. This application Apr. 30, 1973, Ser. No. 355,727

Int. Cl. H02g *3/06*

U.S. Cl. 285—159 **2 Claims**



A connector for securing one end of an unthreaded flexible electrical conduit to the sidewall of an outlet box or the like, comprising a relatively thick-walled, hollow bushing that is adapted to fit into the knockout opening and slidably receive the conduit therein, the bushing having a longitudinally split rear portion and one or more external slots generally equally spaced around its circumference and a reduced diameter portion at its opposite end, the split portion and slots each containing a rubber-like deformable material for substantially prohibiting the passage of fluid therethrough and a nut adapted to threadingly engage a threaded intermediate portion of the bushing and constrict the bushing for clamping the conduit, the slots providing a reduced bushing wall thickness enabling bending of the bushing during constriction, thereby providing generally uniform clamping around the conduit. The nut has an inwardly depending radial flange which engages the reduced diameter portion to lend support against rocking by the bushing.

3,801,132

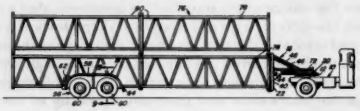
EXTENDIBLE BOOM AND MAST TRAILER

Jack J. Haynie; David H. Roland, both of Charlotte, and Torrence Simpson, Jr., Harrisburg, all of N.C., assignors to J. A. Jones Construction Company, Charlotte, N.C.

Filed Aug. 29, 1972, Ser. No. 284,591

Int. Cl. B62d *53/06*

U.S. Cl. 280—404 **8 Claims**



An assembly for trailing behind a prime mover and including a forward support section for pivotal support from the prime mover and a rear wheeled carriage section defining a low silhouette saddle for cradling an elongated load intermediate its opposite ends. The forward support section includes structure whereby one end of an associated elongated load may be rigidly secured thereto and in this manner the elongated load defines a chassis portion extending between the forward support section and the rear wheeled carriage section. Also, the forward support section and rear wheeled carriage section include coacting structure whereby the sections may be rigidly secured together for transit behind a prime mover when an elongated load is not being transported.

3,801,133

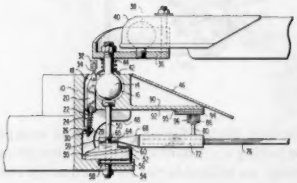
LOAD LEVELLING AND ANTI-SWAY TRAILER HITCH

Woodrow F. Thompson, Highway 80, West Forest, Miss.

Filed May 19, 1972, Ser. No. 255,238

Int. Cl. B62d *53/00*

U.S. Cl. 280—406 A **6 Claims**



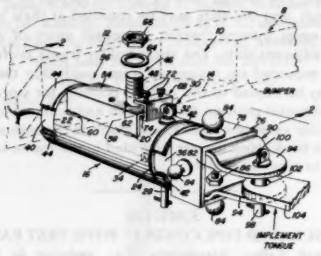
A trailer hitch is provided with a ball and socket coupling and load levelling bars which are arranged for a pivotal movement about an axis coincident with the axis of the ball and socket coupling. The arrangement for pivoting the load levelling bars includes a two-part articulated housing member for receiving the ends of the load levelling bars which is provided with an anti-friction plate arranged for cooperation with a complementary braking surface. The housing member is coupled for rotation with a first beveled cam disc which cooperates with a second beveled cam disc, both of which are concentric with the axis of the socket to provide a variable load levelling force to each bar upon rotation of the housing about the axis. A hitch receiving socket is secured to a draw bar and either the socket or the entire draw bar assembly is pivotably mounted under the control of an adjustable resilient device to control the load levelling forces applied to the load levelling bars.

3,801,134

MULTI-HITCH ELEMENT TOW HITCH CONSTRUCTION

Donald E. Dees, Box 133, Coello, Ill.

Filed July 26, 1972, Ser. No. 275,262
Int. Cl. B62d 53/00
U.S. Cl. 280—415 A 5 Claims



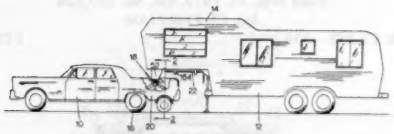
Hitching and towing means for use when operatively coupling and interconnecting a powered draft vehicle, a truck or tractor for example, to a complemental drawn vehicle, a trailer, wagon, farming implement or the like. The disclosed hitch construction comprises a relatively stationary outer sleeve which constitutes a housing, the bore of said housing providing a bearing. Complemental mounting means for said outer sleeve is fixed atop said sleeve and embodies a fixed upstanding screw-threaded anchoring stud, more particularly, a stud having a stud securing nut mounted thereon. An inner relatively movable sleeve is housed in said outer sleeve and journaled for rotation in the bearing. The inner sleeve has means at its respective leading and trailing end portions cooperatively orienting and assembling both sleeves for coordinate use. Hitching means is operatively carried by the trailing end of the inner sleeve for hooking up and towing a trailer, wagon, a farming implement, or the like.

3,801,135

TRAILER HITCH FOR PASSENGER MOTOR VEHICLE

Charles M. Winter, 2580 W. Philadelphia St., York, Pa.

Division of Ser. No. 283,822, Aug. 25, 1972. This application Aug. 20, 1973, Ser. No. 389,668
Int. Cl. B62d 53/00
U.S. Cl. 280—423 R 9 Claims



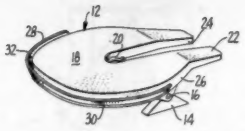
Trailer hitch mechanism mounted within the trunk area of a passenger type motor vehicle and connected directly to the chassis frame members of the vehicle to support and provide means to connect a large capacity fifth-wheel type trailer to the hitch mechanism and provide mobile living quarters for a greater number of people than can be accommodated in the cab of a pick-up truck. Auxiliary supporting wheel means of a variety of types and embodiments are connectable directly to the chassis frame members of a passenger vehicle to augment the supporting capacity of the conventional rear wheels of the vehicle and thereby enable such vehicle, as distinguished from a pick-up truck, to support the relatively heavy weight of the forward end of said fifth-wheel type trailer without undue strain on the passenger vehicle, and thus provide the more comodious travel facilities of such passenger vehicle to accommodate a full contingent of occupants for which the vehicle normally is designed. Quick detachment of the trailer and auxiliary supporting wheel means from the vehicle readily restores the vehicle to the normal appearance of the vehicle with a minimum of effort.

3,801,136

LUBRICANT DRIP PREVENTER FOR A FIFTH WHEEL

Joseph J. Cunha, Castro Valley, Calif., assignor to Cunha Products, Inc., Hayward, Calif.

Filed Jan. 26, 1973, Ser. No. 326,674
Int. Cl. B62d 53/08
U.S. Cl. 280—433 8 Claims



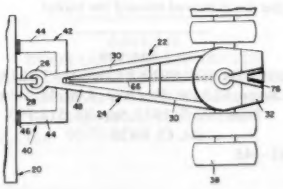
An impervious trough surrounding a portion of the periphery of a fifth wheel. The trough is V-shaped, one side being formed by the edge surface of the fifth wheel, the other surface being formed by a band fastened to the edge surface. The band resides at an angle to the edge surface of about 45° to facilitate cleaning the trough. The upper edge of the band resides below the bearing surface of the fifth wheel to avoid interference therewith.

3,801,137

AUTOMATIC RELEASING BACKING DEVICE FOR TRUCK DOLLY

Mark L. Zucca, 1608 Lafayette, Alameda, Calif.

Continuation-in-part of Ser. No. 147,791, May 28, 1971. This application July 7, 1972, Ser. No. 269,788
Int. Cl. B62d 53/00
U.S. Cl. 280—476 20 Claims



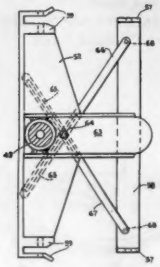
Apparatus attached to the rear portion of a truck adjacent the hook or coupling and/or to the dolly which is releasably attachable to the coupling. The apparatus operatively engages the tongue or draft bar of the dolly when the same has been attached to the coupling in a manner to prevent relative lateral movement between the truck and dolly during backing up of the same. When the dolly is connected to a semi trailer, the apparatus permits normal pivotal lateral movement between the truck and trailer for normal driving conditions.

In certain embodiments of the invention, the restraint against lateral movement is automatically released when the conventional fifth wheel of the dolly moves into its operative subjacent relationship with the semi trailer.

3,801,138
TRAVEL HOME WITH CAR-TOP HITCH

Robert G. Quick, Manlius, N.Y., assignor to Hy-Rider Inc., Trout Creek, N.Y.

Division of Ser. No. 199,920, Nov. 18, 1971. This application June 25, 1973, Ser. No. 373,150
Int. Cl. B62d 53/00; B60d 1/08
U.S. Cl. 280—478 R 3 Claims

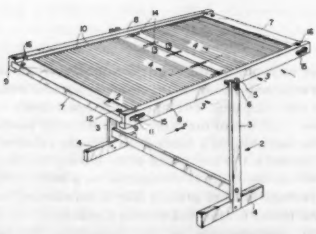


A car-towed trailer has its foreportion segmented in three horizontally extending sections, the two lower sections being telescopically slideable up into the top section by hydraulic means so as to overlie the tow-car which has an ear at each side projecting up through the roof at the back of the driver's seat. The bottom telescoping section has a pendant hitch tube oscillatably secured thereto and rotatably secured to an underlying crossbar having a pair of forwardly projecting ears at each side adapted to extend along each side of a car-roof ear and be secured thereto by a clevis pin through the ears. The rear portion does not telescope and has wheels rearward of the foreportion spaced from the connected tow-car so that the tow-car can be driven forward or backed under the overlying foreportion. Support legs attached to the upper foreportion section may be folded up into hidden position at each side while traveling or folded down and hydraulically extended to support the foreportion when the tow-car is unhitched. The trailer-supported hitch crossbar has a pendant headed stud extending down through slots in one end of each of two forwardly extendable alignment arms whose forward ends carry pendant pins insertable in holes in a cross plate between the car-roof ears, the arm slots being of such length as to move the trailer foreportion transversely for guiding the ears into position when the car is moved toward the trailer.

3,801,139
HOLDER FOR SHEET LIKE MATERIALS

Victor E. Larson, 6234 Walker Ave., Lincoln, Nebr.

Filed Dec. 7, 1972, Ser. No. 312,793
Int. Cl. B42d 17/00
U.S. Cl. 281—45 12 Claims

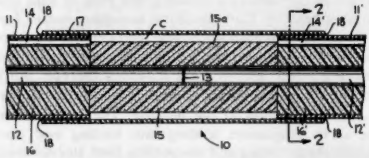


A holder for sheet like materials such as blueprints, tracings, newspapers, and paper and cloth samples, comprises a sheet holder frame having longitudinal grooves in which wood slats or the like are mounted at their opposite ends so as to be freely slidable therein. The slats or the like are arranged side by side in laminar fashion, and are forced together by springs, such that a sheet like member can be inserted between adjacent slats by wedging them apart, inserting the sheet, and permitting the slats to be forced together again by the springs. The springs may be tension springs or compression springs, and the slats may be rounded at their edges or have openings formed therein to permit entry of a pin to separate adjacent slats. The sheet holder frame preferably is pivotally mounted on a support frame such that the holder frame may be moved to the vertical position for storage, and to the horizontal position for insertion and removal of sheets, as well as for viewing of the sheets, much in the manner of the pages of a book. Notches are provided in the frame to permit insertion or removal of slats.

3,801,140
PRE-INSULATED PIPE CONDUIT WITH TEST PASSAGE

James Paul Keller, Alexandria, Va., assignor to John L. Renshaw Inc., Beltsville, Md.

Filed Aug. 15, 1972, Ser. No. 280,839
Int. Cl. F16l 11/12
U.S. Cl. 285—47 8 Claims

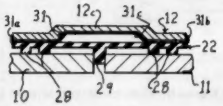


Disclosed is a pipe conduit assembly having an inner conduit for a working fluid, an outer, protective covering conduit, an insulating material therebetween and an additional test passage, the latter being useful to test the integrity of the conduit joints after lengths of the conduit are assembled on the site of eventual use.

3,801,141
PIPE CLAMP WITH CAPTIVE BRIDGING MEMBER

Albert A. Hollingsworth, Anniston, Ala., assignor to The Mead Corporation, Woodward, Ala.

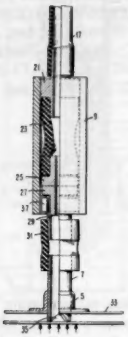
Filed Sept. 11, 1972, Ser. No. 287,624
Int. Cl. F16l 21/06
U.S. Cl. 285—236 1 Claim



A clamp for forcing an elastomeric gasket into sealing contact with the outer surfaces of two end to end conduits. The clamp itself is a unitary sleeve, split longitudinally and slit for a portion of its circumference to provide separately clampable portions which may be secure about the gasket, thus to seal and make fluid tight said conduits, even though the conduits may be of different diameters, out of round, or have different surface contours, as for example, as-cast cast iron pipe. My invention is characterized by the provision of a relatively thin sheet metal member which bridges over the longitudinal split in the sleeve and further is characterized by the provision of

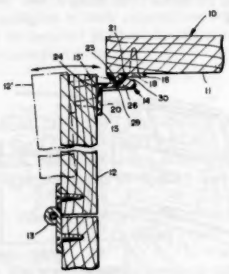
said bridging member which has arcuate, outturned flanges at each end which lie alongside the ends of the clamp, whereby the arcuate member is held captive at all times between the gasket and the inner surface of the clamp proper.

3,801,142
FLUID COUPLING
Alan L. Jones, Endwell; George T. Judson, Whitney Point, and Robert M. Kellogg, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1972, Ser. No. 267,815
Int. Cl. F16l *27/00*; **B04b** *7/00*
U.S. Cl. 285—280 **1 Claim**



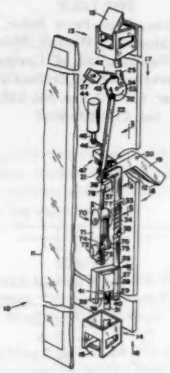
An improved fluid coupling permitting relative rotation between two rotatable fluid-tight seal elements, having confronting annular fluid-tight surfaces, maintained in a fluid-tight relationship by axial compression of a length of elastic tubing forming one of the fluid connections to said seal elements.

3,801,143
DOOR LATCHING STRUCTURE
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill.
Filed Jan. 2, 1973, Ser. No. 320,205
Int. Cl. E05c *19/02*
U.S. Cl. 292—76 **8 Claims**



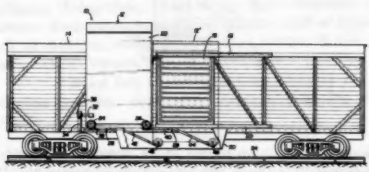
A door latching structure including plastic keeper and latch members for mounting on a furniture case or the like and a door, respectively, the keeper member having a wedge-shaped projection for engagement with a wedge-shaped projection on the latch member, the latch member being resilient and having ribbing for stabilizing the latch member incident to engagement of the projections.

3,801,144
MECHANICAL AND ELECTRICAL CONTROL SYSTEM FOR A DOOR PANIC CONTROL DEVICE
Robert B. Diehl, 3200 Longview Ave., Bloomington, Ind.
Filed Feb. 24, 1972, Ser. No. 229,049
Int. Cl. F05c *21/00*
U.S. Cl. 292—92 **10 Claims**



A system for controlling both mechanically and electrically a panic control device for a door. The panic control device is operable to retract a pair of bolts movably mounted in the door. A main solenoid has a plunger connected to the linkages which connect the panic control device to the bolts. By moving the plunger of the main solenoid, the linkages are moved to retract the bolts. An electrical switch is connected between a source of electrical energy and the main solenoid and has an actuating arm movable by the linkages. Initial downward movement of the panic control device causes the linkages to actuate the switch thereby connecting the main solenoid to a source of electrical energy and allowing the main solenoid to complete the retraction of the bolts. A second solenoid has its plunger connected to a dogging mechanism which is provided with a stop positionable adjacent the panic crash bar. Operation of the second solenoid prevents outward movement of the panic crash bar thereby insuring that the bolts remain in the retracted position even though the main solenoid is deactivated.

3,801,145
DOOR LOCKING APPARATUS
Frank A. Mauritz, P.O. Box 9133, Fort Lauderdale, Fla.
Filed Aug. 1, 1972, Ser. No. 276,958
Int. Cl. B61d *19/00*; **E05b** *65/20*
U.S. Cl. 292—184 **7 Claims**



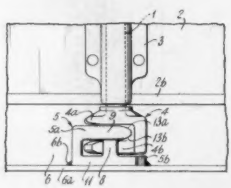
Apparatus for locking a door of a vehicle including a U-shaped spring mounted on the vehicle to receive and embrace the vehicle, the spring having one position in which it clamps the door of the vehicle in a locked condition and another position in which it is released from the door so that the door can

be opened. The spring is movable and rides on guides between the lock position and the release position. Electromagnets are provided for pulling the spring to release it so that it can be moved from the lock position to the release position.

3,801,146
DOOR LOCK FOR TRUCKS, TRANSCONTAINERS AND THE LIKE

Hans Donath, Zwickau; Hans-Peter Beier, Wilkau-Hasslau; Gottfried Otto, Cainsdorf; Werner Mutz, and Winfried Tausch, both of Zwickau, all of Germany, assignors to Ministerium fur Verkehrswesen, Berlin, Germany

Filed Mar. 1, 1972, Ser. No. 230,570
Int. Cl. E05c *9/08*
U.S. Cl. 292—218 **5 Claims**

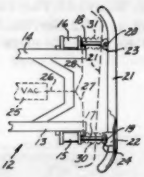


Locking device, mainly for doors of trucks, transcontainers and the like. Steel rods extend over outer surfaces of the doors and are pivoted thereto. Each rod has keys, turnably insertable in stationary clasps to provide a lock mechanism. Mating surface portions of the key and clasp are of such construction and form that, regardless of rough service conditions, not only the key finds a safe locking position but the doors can be opened with a minimum of effort.

3,801,147
SHOCK ABSORBING BUMPER

Cedric A. Barrett, 662 Manhattan, S.E., Grand Rapids, Mich., and John P. Kingsbury, 31 College N.E., Grand Rapids, Mich.

Filed Nov. 26, 1971, Ser. No. 202,242
Int. Cl. B60r *19/06*
U.S. Cl. 293—9 **4 Claims**

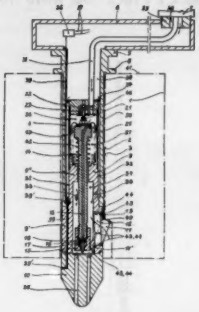


A pneumatic, vacuum return shock absorption device and more specifically a shock absorbing bumper useful as a front and/or rear bumper for motor vehicles and motor boats and the like in which an air cylinder provides a cushion to shock applied to the piston of the cylinder and is vented to atmosphere on the high pressure side, the vent providing a selected resistance and a vacuum connection attached to a vacuum source in the vehicle whereby the piston and bumper are restored to regular position after the shock.

3,801,148
GRABBING DEVICE FOR A NUCLEAR CHARGING MACHINE

Friedhelm Rosgen, Forsbach, Germany, and Hans Schwarz, Umiken, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 14, 1971, Ser. No. 180,416
Claims priority, application Switzerland, Sept. 30, 1970, 14566/70
Int. Cl. B66c *1/54*
U.S. Cl. 294—86 A **3 Claims**

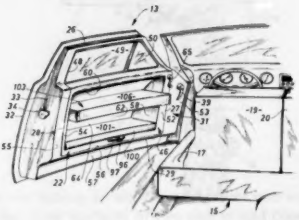


A grabbing device for manipulating a fuel element of a nuclear reactor comprises a carrier tube adapted to be inserted into a hole extending longitudinally within the fuel element and which is provided with an extraction recess. Cooling gas is caused to flow through the carrier tube, which latter contains a gas pressure actuated longitudinally moveable plunger having latch means adapted to engage the extraction recess provided in the fuel element.

3,801,149
AUTOMOBILE BODY STRUCTURE INCORPORATING HINGED HOUSING

Gerhard Paul Reimann, 145 George St., Toronto 229, Ontario, Canada

Filed Oct. 12, 1971, Ser. No. 187,959
Claims priority, application Canada, Sept. 8, 1971, 122289The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.
Int. Cl. B60n *1/10*; **B60p** *3/34*
U.S. Cl. 296—23 R **29 Claims**



A housing including a window frame is hingedly mounted along its top edge in the door of an automobile body structure for movement between extended and retracted positions so as to provide additional sleeping width for a person lying on a seat of the automobile. An intermediate sloping panel within the housing separates an inwardly open recess from an outwardly disposed window-receiving compartment. Within the

recess, there is provided an upwardly facing supporting surface which is generally coplanar with a top surface of the seat when the housing is moved into its extended position. A cushion member is disposed between the door and the seat and such a cushion member has a top surface which is also coplanar with the top surface of the seat and with the supporting surface in the housing when that housing is moved into its extended position. The cushion member is usefully formed with terminal guide pins so that it can be removably supported in slots formed in webs defining the front and rear ends of the recess so that the cushion member then provides an arm rest when the housing is in its retracted position.

3,801,150

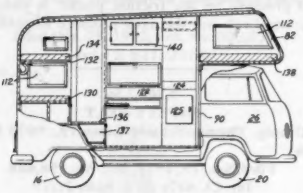
CAMPER-COMPACT BUS COMBINATION STRUCTURE AND METHOD OF ASSEMBLING SAME

Richard L. Decoster, and Maureen H. Decoster, both of Box 147-DZ, RR 5., Elkhart, Ind.

Filed July 17, 1972, Ser. No. 272,499

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 R **9 Claims**



A camper-compact bus combination structure in which the bus body, such as that used on a Volkswagen bus, is cut transversely at the rear of the driver's compartment and along the chassis to the engine compartment at the rear and upwardly therefrom to provide upstanding side members along and above the engine compartment. A camper is seated on the chassis and over the remnants of the body portion and includes a front panel with an opening corresponding generally to the opening at the rear of the driver's compartment so that the driver's compartment and the compartment in the camper form essentially a single living area. The camper extends outwardly from the remnants of the side walls of the body of the bus to the rear of the cab and preferably upwardly and over the cab. The method of cutting the body of the bus retains the frame, front and rear bumpers, engine compartment, wheel wells and taillights in their original condition and permits the camper to be secured in place in direct communication with the driver's compartment.

3,801,151

DOUBLE-ACTING LIFT CYLINDER WITH INTEGRAL VELOCITY FUSES

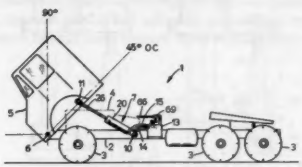
Roy Reynolds, Milwaukee, and William T. Neill, Brookfield, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 284,874

Int. Cl. B62d *27/06*

U.S. Cl. 296—28 C **9 Claims**

A truck has a cab tiltable between full-down and full-tilt positions by means of double-acting hydraulic lift cylinders. The double-acting cylinder and the control system therefor, which includes a manually, electrically or air driven pump and a manually operable selector valve, enables the cab to be positively moved from full-down to overcenter position whereupon the cab then slowly descends under the force of gravity to full-tilt position. Furthermore, it enables the cab to be positively moved from full-tilt position to overcenter position whereupon the cab then slowly descends under the force of gravity to full-down position. Each cylinder is provided with two integrally mounted velocity fuses as a safety feature. In the event of a hydraulic system failure, one fuse prevents free-fall movement of the cab when the cab is in any position



between full-down and overcenter position. In one embodiment of the invention, both fuses are located in the lower end of the cylinder. In another embodiment, the fuses are located at opposite ends of the cylinder.

3,801,152

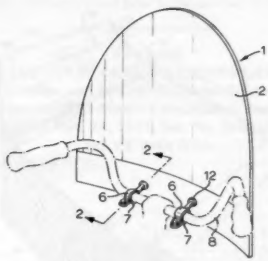
UNIVERSALLY MOUNTABLE WINDSHIELD

Thomas William Tims, 7-Henry Corson Pl., and Robert Tudor Pemberton, 34 Wotten Way, both of Markham, Ontario, Canada

Filed May 5, 1972, Ser. No. 250,819

Int. Cl. B62j *17/04*

U.S. Cl. 296—78.1 **8 Claims**



A universally mountable windshield for bicycles, motorcycles or snowmobiles, having fastening means for attaching the windshield to the vehicle, comprising a spacer portion, clamp means at one end of the spacer portion and means adapted to secure the windshield at the other end of the spacer portion.

3,801,153

ELECTROSLAG REMELTING APPARATUS FOR MAKING METAL INGOTS

Wolfgang Holzgruber, Kapfenberg; Peter Machner, Leoben; Otmar Kleinhagauer, and Josef Matzer, both of Kapfenberg, all of Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria

Filed July 15, 1971, Ser. No. 163,051

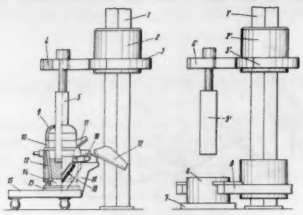
Claims priority, application Austria, July 20, 1970, A 6572/70

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **5 Claims**

At least two vertically slidable electrode holders are provided, in an electroslag remelting apparatus each of which has a predetermined working range. Means are provided for electrically connecting each of said electrode holders to a transformer. A cooled ingot mold of metal is disposed within the working range of said electrode holders and has a cooled mold bottom. A slag-melting vessel is adapted to be disposed within

the working range of at least one of said electrode holders and has cooled metal walls. This vessel has a smaller cross-sectional area than the ingot mold. Means are provided for transferring liquid slag from the slag-melting vessel to the ingot mold.



3,801,154

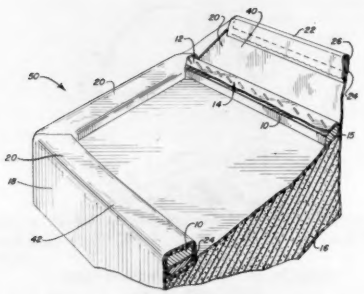
SELF-LOCKING CUSHION ASSEMBLY

Gordon Hultquist, Chicago, and Patrick J. Tyler, Oak Park, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed June 2, 1972, Ser. No. 259,244

Int. Cl. A47c *31/02*

U.S. Cl. 297—218 **4 Claims**



A simplified, self-locking cushion assembly, such as a seat or back cushion for a vehicle seat. The cushion assembly incorporates a flexible cover having a flap portion along each of its edges. The flexible cover extends around a resilient cushion filler resting upon a cushion support which is attached to the frame member of the cushion assembly. In assembly, the flexible cover is pulled tightly over the top of the resilient cushion filler, thereby compressing the cushion filler between the flexible cover and the cushion support. A part of the flexible cover flap portion is tucked between the frame member and cushion support. The force created by the tendency of the compressed cushion filler to expand against the cushion support secures the flap portion in that position.

3,801,155

ROTARY SEAT BACK ADJUSTER

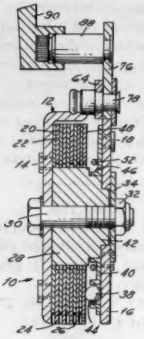
Loran M. Hodgen, and Gary L. Weimer, both of Elkhart, Ind., assignors to Excel Industries, Inc., Elkhart, Ind.

Filed July 7, 1972, Ser. No. 269,548

Int. Cl. B60n *1/04*, *1/02*; **G05g** *5/06*; **E05d** *11/18*

U.S. Cl. 297—374 **3 Claims**

The seat back adjuster includes a rotary multiple friction plate mechanism with relatively rotatable parts secured to a seat and tiltable seat back, respectively, which is normally locked by a spring urged ball-and-cam arrangement which exerts axial pressure on the friction plates. A cam and lever manual control releases the axial pressure to permit seat adjustment.



3,801,156

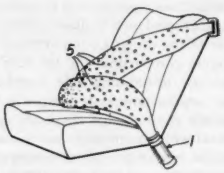
SAFETY-BELT

Hubert Granig, Thomas-Schmid-Gasse 19,, 9020 Klagenfurt, Austria

Filed Nov. 15, 1971, Ser. No. 198,668

Int. Cl. A47c *1/10*; **B60r** *21/10*

U.S. Cl. 297—386 **4 Claims**



A safety belt which comprises at least one hollow body, at least one member containing expandable gas for blowing up the hollow body and including closure means, A device for releasing the blow-up in case of an accident. The hollow body has a plurality of exhaust openings for emergence from the hollow body within a shortest time period under the effect of the pressure exerted by the body of the belt user.

3,801,157

MINING MACHINE WITH A PIVOT STRUCTURE FOR A MINING HEAD, GATHERING HEAD AND DISCHARGE CONVEYOR BOOM

Fay E. Munger, Upper Arlington, Ohio, assignor to Jeffrey Galion Inc., Columbus, Ohio

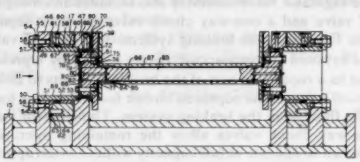
Filed Dec. 7, 1972, Ser. No. 312,842

Int. Cl. E21c *27/24*

U.S. Cl. 299—64 **19 Claims**

A continuous mining machine has a pivoting mining head and gathering head at the front of the machine and a pivoting discharge conveyor boom extending from the rear of the machine. The mining head, gathering head and conveyor boom pivot on a pivot structure about a common axis. The pivot structure has first and second upright pivot supporting members on the main frame of the mining machine which mount and secure a pivot means for the mining head and a

pivot means for the gathering head and conveyor. Either the pivot means for the mining head or the pivot means for the



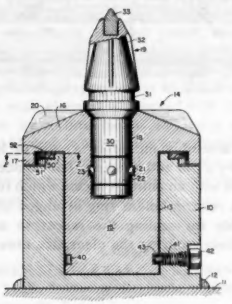
gathering head and conveyor can be removed from the pivot structure while the other pivot means remains mounted and secured in the pivot structure.

3,801,158

ROTATING HUB ASSEMBLY FOR A MINING CUTTER BIT

Frederick J. Radd; Donald H. Oertle, and Louis H. Wolfe, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 25, 1972, Ser. No. 300,539
Int. Cl. E21c *35/18*
U.S. Cl. 299—86 **5 Claims**



A mounting assembly for a mining tool adapted to fit in a bit block consisting of a hub assembly having an axial opening therethrough of a size to journal a mining cutter bit. The bit block has a larger opening adapted to accept the hub assembly and permit rotation of the hub assembly in the bit block. The hub assembly extends over the bit block so that a seal can be mounted between the bit block and the hub assembly. A peripheral groove is formed in the hub assembly so that a screw can lock the hub assembly into the bit block.

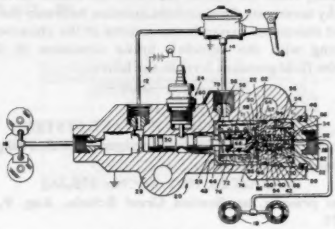
3,801,159

BRAKE PROPORTIONING VALVE WITH CONTROLLED BLEND BACK

Keith H. Fulmer, 401 N. Bendix Dr., South Bend, Ind.

Filed Nov. 13, 1972, Ser. No. 306,257
Int. Cl. B60t *11/34*
U.S. Cl. 303—6 C **6 Claims**

A proportioning valve for the hydraulic system of a vehicle to control the braking force on the rear wheels with respect to that on the front wheels. The valve includes a housing formed with an inlet chamber connected to one line of the vehicle's dual master cylinder, and an outlet chamber in communication with the rear wheel brakes of the vehicle. The valve is normally open, permitting unimpeded fluid flow between the inlet and outlet chambers, during an initial brake application. However, when the pressure level in the outlet chamber reaches a first value, the valve reacts to restrict the flow between the two chambers so that the pressure level in the inlet chamber rises more rapidly than the pressure level in the outlet chamber up to a second value of pressure level within the outlet chamber. Upon attaining the second value of pressure level, the valve is acted upon by a pressure responsive member which causes the pressure level in the outlet chamber



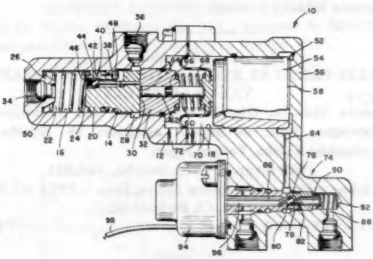
to increase at a greater rate than the pressure level in the inlet chamber. The pressure responsive member further includes fluid flow control means for regulating the rate of increase in pressure level in the outlet chamber so that the blend back of pressures between the inlet and outlet is more gradual. This pressure level in the outlet chamber continues to build up at this new accelerated rate until the chamber pressures are substantially the same, at which time the valve opens to establish substantially uninterrupted flow between the chambers.

3,801,160

HYDRAULIC PRESSURE MODULATOR

Thomas C. Schafer, and Martin A. Shields, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Nov. 24, 1972, Ser. No. 309,012
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **8 Claims**



An adaptive braking modulator is disclosed which includes a housing defining a bore therewithin and a piston slidably mounted in the bore which defines a pair of chambers between opposite ends of the piston and corresponding ends of the bore. One of the chambers is communicated to the vehicle's master cylinder, and the other chamber is communicated to the vehicle's fluid pressure actuated brakes. A passage extends through the piston to communicate one of the chambers with the other chambers, and a check valve is provided in the passage to control flow of fluid therethrough. An actuating stem extends from the check valve and projects from one end of the piston. The actuating rod maintains the check valve open when the one end of the piston is urged into engagement with the corresponding end of the bore. A spring

is provided to assist fluid pressure in the bore to urge the one end of the piston toward the corresponding end of the bore. A fluid motor is provided which is adapted to urge the piston away from the end of the bore. An electrically operated valve is responsive to a signal from the logic controller of the adaptive braking system to communicate fluid pressure to the fluid motor when an incipient skidding condition is sensed, so that the fluid motor urges the piston away from the end of the bore when an adaptive braking cycle is initiated. As the piston moves away from the end of the bore, the check valve closes to thereby terminate fluid communication between the chambers, and thereafter expands the volume of the chamber communicating with the vehicle's brake actuators to thereby reduce the fluid pressure level in the latter.

3,801,161

ANTI-LOCK VEHICLE BRAKE SYSTEM

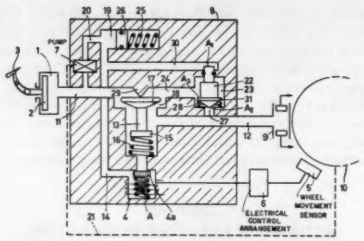
Denis Sharp, Grinstead, England, assignor to U.S, Philips Corporation, New York, N.Y.

Filed July 26, 1972, Ser. No. 275,365

Claims priority, application Great Britain, Aug. 9, 1971, 37353/71

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **10 Claims**



An anti-lock braking system for prevention of dangerous skids, providing for relieving brake pressure when the wheel of the vehicle tends to lock, and then increasing the brake pressure without having to apply the brake. The brake pressure increase is performed at an increasing rate relative to a reference value of pressure.

3,801,162

FLUID PRESSURE REGULATOR VALVE AND SAFETY VALVE ASSEMBLY

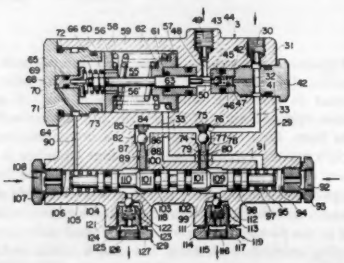
Naosuke Masuda, Higashi-Matsuyama, and Toshihiro Abe, Kawagoe, both of Japan, assignors to Jidosha Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1973, Ser. No. 348,821

Claims priority, application Japan, June 1, 1972, 47-54463

Int. Cl. B60t *15/46*

U.S. Cl. 303—84 A **7 Claims**



A fluid pressure regulator valve assembly for pressure accumulators used in a dual full pressure hydraulic brake system for vehicles. The regulator valve assembly is connected between an engine driven hydraulic pump and the accumulators to regulate the maximum pressure stored in the accumulators. The regulator valve assembly also includes an emergency shut-off valve and a one-way check valve for each separate hydraulic fluid from the braking system. The shut-off valves ferential between the two accumulators caused by a pressure drop due to a rupture in one of the braking circuits to actuate the shut-off valve in the ruptured circuit for preventing loss of hydraulic fluid from the braking system. The shut-off valves and one-way check valves allow the remaining operational brake circuit to operate at full capacity without interruption.

3,801,163

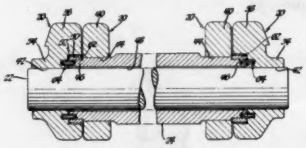
TRACK CHAIN SEAL

Natabara Khuntia, Hudson, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 304,081

Int. Cl. B62d *55/20*

U.S. Cl. 305—11 **3 Claims**



A track link assembly including a pair of link members joined together by a pin and bushing. The adjacent link members are provided with an annular recess which receives an annular seal and a reinforcement ring arranged in axially staggered relationship for sealing the recess so as to prevent foreign matter from entering the clearance area between the pin and bushing.

3,801,164

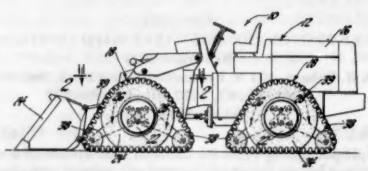
TRACTION DEVICE FOR RUBBER-TIRED VEHICLE

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 304,080

Int. Cl. B62d *55/04*

U.S. Cl. 305—23 **3 Claims**



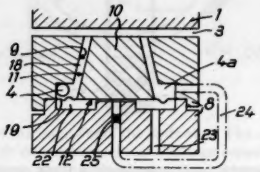
A traction device which includes a pair of guide rollers that are combined with a rubber tire and an endless track and are interconnected by adjustment means which serve to reposition one guide roller relative to the other so as to vary the extent of track available for ground contact.

3,801,165

SUPPORT DEVICE EMPLOYING A FLUID FILM

Jean G. Lombard, Boulogne-sur-Seine, France, assignor to Centre D'Etudes Et De Recherches De La Machine-Outil, Neuilly-sur-Seine, France

Filed Mar. 16, 1972, Ser. No. 235,308
Claims priority, application France, Mar. 29, 1971, 71.10978
Int. Cl. F16c 17/00
U.S. Cl. 308—5 5 Claims



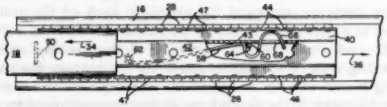
This invention relates to a device for supporting a body on a structure, employing a film of pressurised fluid, constituted by a conduit feeding pressurised fluid, which connects said film to a source of pressurised fluid, whilst a restriction is disposed on said conduit, wherein the structure is constituted by a main frame which comprises a cavity and by a male element which is introduced into said cavity and is delimited by a male surface which reproduces, at least partly, the female surface delimiting the cavity, said male surface of the element is constituted by a wall which is at least partly inclined with respect to the straight line perpendicular to the central zone of the film and the male element is coupled with the main frame of the structure by a link means adjusting its position with respect to said frame in a direction substantially perpendicular to the central zone of the fluid film, whilst the restriction is constituted by the space between said inclined wall of the element and the main frame of the structure.

3,801,166

DRAWER SLIDE BEARING RETAINER LOCK

William D. York, Indianapolis, Ind., assignor to Herbert S. Fall, Indianapolis, Ind.

Filed Jan. 5, 1973, Ser. No. 321,292
Int. Cl. F16c 21/00
U.S. Cl. 308—3.8 15 Claims



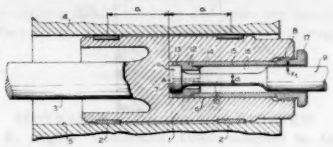
A slide comprising a pair of telescopically related track members, ball bearings supporting the track members for relative longitudinal movement, a cage or retainer for the ball bearings longitudinally movable relative to the track members, and a device for locking the retainer against movement from a predetermined locking position relative to one of the track members when the other of the track members is moved longitudinally out of engagement with the said one track member. The locking device includes a locking member carried on the retainer and a cooperating locking member carried on the said one track member, the locking members being engageable when the retainer is in its said locking position and the said other track member is disengaged from the said one track member.

3,801,167

DEVICE FOR CENTRALLY GUIDING THE WORKING PISTON IN THE WORKING CYLINDERS OF HIGH-PRESSURE COMPRESSORS OR PUMPS

Albert Strebel, Binningen, Switzerland, assignor to Maschinenfabrik Burckhardt AG, Basle, Switzerland

Filed Apr. 7, 1971, Ser. No. 132,133
Claims priority, application Switzerland, Apr. 7, 1970, 5127/70
Int. Cl. F16j 15/18
U.S. Cl. 417—90 12 Claims



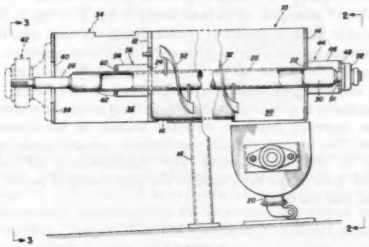
A device for centrally guiding the working piston in the working cylinders of high-pressure compressors or pumps, wherein the faces of the working cylinders are releasably fitted to a lantern which is fixedly or releasably connected to the drive frame, and the working pistons are releasably fitted to the guide pistons which are guided inside the lantern and are connected to the crosshead via a fixedly fitted flexible stem. An intermediate piece with a flexible stem is centrally inserted in a co-axial bore inside the guide piston between the working piston and the supporting surface at the base of the bore. After the working piston has been fitted it is bought into non-positive connection with the guide piston in the supporting surfaces. When any axial departure occurs as a result of the oblique position of the guide piston the reaction force acting on the working piston, while it is moving longitudinally inside the bore of the working cylinder, is reduced to such an extent that said force is very largely prevented from having any detrimental effect on the sealing and guiding parts inside the working cylinder or on the working piston itself.

3,801,168

SUPPORT ASSEMBLY FOR A SHAFT

James G. Moore, Williamsville, N.Y., assignor to Blaw-Knox Food and Chemical Equipment Inc., Buffalo, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,393
Int. Cl. F16c 35/00
U.S. Cl. 308—15 9 Claims



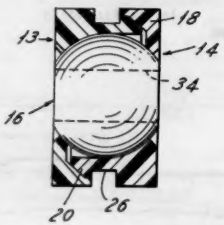
A support assembly for a shaft disposed within an apparatus is disclosed including a support wall in which is mounted a bearing support member. The support wall is provided within an orifice through which the shaft extends, the orifice being dimensioned to provide a clearance of at least one-eighth inch therebetween. The bearing support member is provided with a bearing means which receives the shaft in journalled relationship.

3,801,169

BALL AND SOCKET JOINT

William P. Mullen, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 7, 1972, Ser. No. 287,116
Int. Cl. F16c 23/00
U.S. Cl. 308—72 9 Claims



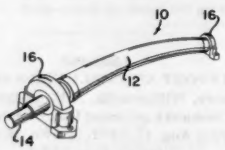
A ball and socket joint useful for providing a pivotal connection between a pair of members such as a rod and a sheet metal plate. The joint includes a pair of nesting members that define a socket and rotatably support a ball. The socket members have circumferentially spaced prong portions constructed to fit through an aperture in a metal plate and to grip the edge of the aperture. A ball has a central opening constructed to receive a rod of a linkage system.

3,801,170

SLEEVED, BOWED ROLL LUBRICATION

Robert A. Dionne, Hollis, N.H., assignor to W. P. Evans & Son Limited, Manchester, England

Filed Sept. 28, 1972, Ser. No. 293,075
Int. Cl. F16c 1/24, 33/66
U.S. Cl. 308—107 12 Claims



An improved method and apparatus for lubricating bearings in a closed elongate structure comprising placing a fluid-distendable tubular member within the structure, placing a lubricant about the outer surface of the tubular member, and causing the lubricant to be displaced radially to those sites within the elongate structure which require lubrication. The displacement is achieved by applying fluid pressure within the tubular member from an exterior source as lubrication is needed. The invention finds particularly advantageous application in the manufacture and maintenance of bowed spreader rolls of the type used in the processing of paper, film textiles, and the like.

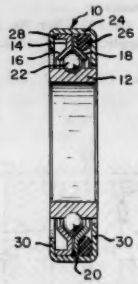
3,801,171

PRELOADING ANTI-FRICTION BEARING ASSEMBLY

Alfreds Rozentals, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.

Filed June 30, 1972, Ser. No. 268,007
Int. Cl. F16c 27/00
U.S. Cl. 308—184 10 Claims

A preloaded anti-friction bearing assembly comprising coaxial relatively rotatable inner and outer races, a plurality of balls disposed in spaced relation between said inner and outer races, at least one of said races being radially segmented, said segments being axially displaced with respect to each other, at least one of said segments being preloaded by preloading means to thereby exert a preloading force against said balls, said preloading means including at least one substantially non-compressible, flowable, resilient ring.

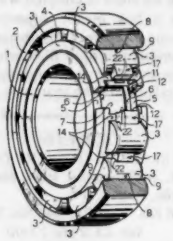


3,801,172

SPACER CAGE FOR ROLLING BEARINGS

Bartolo Veglia, Torino, Italy, assignor to Riv-Skf Officine Di Villar Perosa S.p.A., Torino, Italy

Filed Oct. 17, 1972, Ser. No. 298,329
Claims priority, application Italy, Nov. 24, 1971, 70847/71
Int. Cl. F16c 33/46
U.S. Cl. 308—217 11 Claims



A spacer cage for rolling bearings is described. The main feature of this spacer cage is that of having deformable projecting portions, arranged for arresting each of the rolling bodies in a first position, which permit to assemble in a most simple and rapid manner one race of the bearing on the remaining part of the same, and seats for holding the same rolling bodies in a second position, which permit to separate from the races of the bearing the assembly constituted by the cage and the rolling bodies, in order to permit to inspection the rolling tracks of said races. The passage from the first to the second position takes place by applying a radial force of a predetermined value to each rolling body.

3,801,173

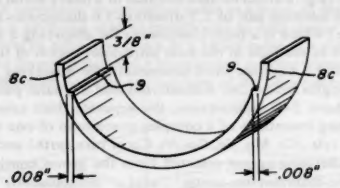
CONNECTING ROD INSERT BEARING FOR INTERNAL COMBUSTION ENGINES

Delbert R. McKindree, 309 Ridge Ave., Butler, Pa.

Filed Mar. 9, 1972, Ser. No. 233,100
Int. Cl. F16c 33/10
U.S. Cl. 308—240 3 Claims

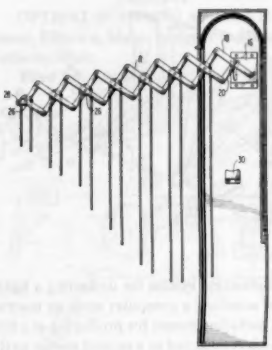
The invention provides in an internal combustion engine, a connecting rod insert bearing of two 180° sections, the abutting ends of which are 90° removed from the dead center

positions of the connecting rod and crank-shaft, and with the end portions of the sections being rabbeted on their inner faces so that together there is provided a transverse oil groove



at each side of the liner where the ends abut. The arrangement extends the life of connecting rod bearings especially in high compression ratio engines while providing controlled oil pressure lubrication.

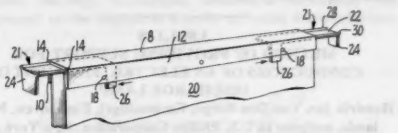
3,801,174
NECKTIE STORAGE DEVICE
George W. Kanarr, 265 Charles St., Luzerne, Pa.
Filed Aug. 29, 1972, Ser. No. 284,550
Int. Cl. A47f *3/06*
U.S. Cl. 312—136 **4 Claims**



The invention comprises a storage cabinet for men's four-in-hand neckties and includes a combined supporting and compacting cabinet for elongated articles of merchandise such as four-in-hand ties and having a rack which is extensible horizontally through and beyond the front of said cabinet for display and selection therefrom after which said rack may be swung down and into compacting vertical position within said cabinet, said rack being temporarily retained or latched in both said horizontally extended and vertically suspended positions.

3,801,175
HANGER AND BINDER UNIT
Joseph D. Giulie, 1015 Corporation Way, Palo Alto, Calif.
Filed Sept. 21, 1972, Ser. No. 291,090
Int. Cl. A47b *63/00*; **B42f** *15/00*
U.S. Cl. 312—184 **2 Claims**

A combination hanger and binder unit is provided wherein a sheaf of paper or the like can be bound together in a neat, permanent binder and wherein hangers are provided at the spine of the binder so that if one desires, the bound volume can be hung in an ordinary file drawer. The hangers can easily be

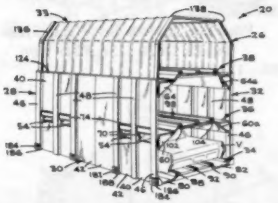


added to existing plastic bindings and when not in use retract so that they do not interfere with normal use or storage of the volume.

3,801,176
MOVEABLE STORAGE CART SYSTEM
Roland K. Higbee, Cincinnati, Ohio, assignor to American Hospital Suppy Corporation, Evanston, Ill.
Filed Apr. 19, 1972, Ser. No. 245,562
Int. Cl. A47b *87/00*; **B61d** *15/04*; **E01b** *13/00*
U.S. Cl. 312—199 **11 Claims**

A system of moveable storage carts which comprises a track assembly resting unsecuredly on a support surface in combination with a plurality of wheeled carts riding thereon, the cart wheels being fixed against swivel action relative to the carts.

3,801,177
FRAMELESS SHIPPING CONTAINER
Donald R. Fylling, San Jose; John R. Einarsson, Los Gatos, and Donald W. Youmans, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed June 4, 1971, Ser. No. 149,986
Int. Cl. B65d *7/46*, *85/68*
U.S. Cl. 312—351 **11 Claims**



A frameless shipping container adapted to be mounted on a railroad flatcar for preventing vandalism and accidental damage to a plurality of heavy articles, such as vehicles, that are separately supported by the container in vertical stacked relationship. The container is completely enclosed except for one end which is open to receive the articles. The container includes a pair of inwardly directed article engaging and supporting torsion beams which serve the double function of supporting the associated articles in tiers and acting as torsion members which evenly distribute torsional forces and minimize wracking of the containers. The vertical weight supporting side walls and end wall are fabricated from a plurality of sheet metal panels each having a channel formed therein. The sheet stock for each of the panels are identically dimensioned and differ only after the channels have been formed

therein in that certain panels have one narrow flange directed outwardly whereas other panels have their narrow flanges directed inwardly, and certain of the panels have fork lift receiving openings therein.

3,801,178

METHOD OF PROVIDING SUPPORT FOR CONDUCTORS OF AN ELECTRIC FILAMENT OR DISCHARGE LAMP

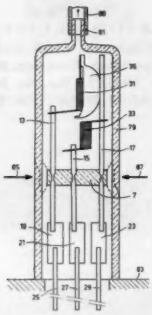
Hendrik Jan Van Den Berge, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 128,339, March 26, 1971, abandoned. This application June 8, 1972, Ser. No. 261,068

Claims priority, application Netherlands, Apr. 7, 1970, 7004939

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **4 Claims**



An electric lamp comprising a support having continuous supporting members and/or current conductors which are secured in a pinch seal. In order to increase the insensitivity to vibrations, the support which extends at right angles to the axis of the lamp is secured to the side wall of the lamp vessel preferably by a sealing operation.

3,801,179

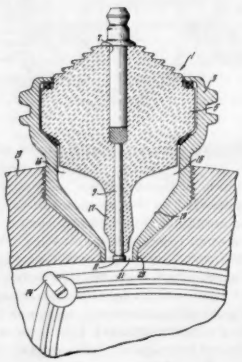
NARROW BAND-PASS ULTRAVIOLET OPTICAL FILTER SYSTEM.

Jan Hendrik Wisse, and Willem Lodewijk Van Es, both of Amsterdam, Netherlands, assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 2, 1968, Ser. No. 695,286

Int. Cl. G02b *5/24;* **F21v** *9/06*

U.S. Cl. 350—1 **8 Claims**



A narrow band-pass ultraviolet filter for continuous determination of protein consisting essentially of a first component (e.g., a concentrated solution of nickel sulfate and cobalt sulfate or red-purple "Corex" A glass) for absorbing substantially, or otherwise eliminating from consideration, all incident light in the visible region of the spectrum and a part of the light in the ultraviolet region of the spectrum, a second component (e.g., a concentrated solution of a heavy metal salt plus an acid addition salt of 2,7-dimethyl-3,6-diazacyclo-1,6-heptadiene) which is a filter component for absorbing a substantial part of the light in the near ultraviolet region of the spectrum, and a separate third component for absorbing light of wavelengths below 260 millimicrons and a greater part of the light above 340 millimicrons, the separate third component consisting essentially of a complex compound of one or more metals (viz., Cr, Mn, Fe, Co, Ni, Cu or rare earth) and one or more chelating agents selected from the group consisting of ethylene-diaminotetra-acetic acid, iminodiacetic acid, nitrilotriacetic acid, diamines, and condensation products of diamines and carbonyl compounds. Components in solution form are enclosed in cells, the walls of which are transparent to ultraviolet light.

3,801,180

OPTICAL DEFLECTION SYSTEMS

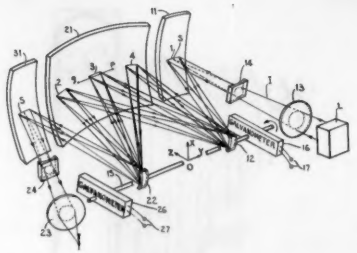
Gerald John MaGuire, Stevenage, and Gordon George Scarrott, Welwyn Garden City, both of England, assignors to International Computer Limited, London, England

Filed June 15, 1972, Ser. No. 263,161

Claims priority, application Great Britain, July 1, 1971, 30850/71

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **8 Claims**



An optical deflection system for deflecting a light beam for the purpose of scanning a computer store or matrix location, the apparatus including means for producing at a first mirror a line image which is reflected to a second mirror so that the line image at the second mirror is at right angles to the image on the first mirror and means for rotating the second mirror about an axis parallel to said line image at the first mirror thereby to deflect the line image reflected from the second mirror.

3,801,181

GRADIENT INDEX LIGHT CONDUCTOR

Ichiro Kitano, Kobe; Ken Koizumi, Itami; Hiroyoshi Matsumura, Osaka; Kunihiko Mukai, Tsu, and Teiji Uchida, Tokyo, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha, Tokyo-to, Japan

Continuation of Ser. No. 848,471, Aug. 8, 1969, abandoned. This application Dec. 7, 1971, Ser. No. 205,667

Claims priority, application Japan, Aug. 10, 1968, 43-56968; Aug. 21, 1968, 43-60097; Aug. 21, 1968, 43-60098; Aug. 21, 1968, 43-60099; Aug. 21, 1968, 43-60100; Sept. 26, 1968, 43-70075

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 R **3 Claims**

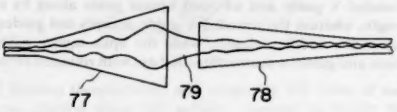
Novel optical lens elements are disclosed, each of said elements consisting of a transparent body having two end sur-

faces crossing its center axis and having a refractive index distribution capable of substantially satifying the following relation.

$$n = N(1 \pm a r^2)$$

where N represents its refractive index at a point on the center axis on a sectional area perpendicular to said center axis, n represents its refractive index at a radial point at a distance r from the former point, and a represents a positive constant.

Furthermore, various applications of the above-mentioned

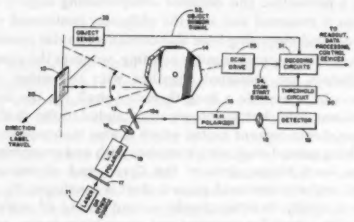


optical lens elements are disclosed, said applications corresponding to various optical instruments such as, for example, fiberscopes made of combinations of the optical lens element and an optical fiber bundle, a compound optical lens consisting of a plurality of the optical lens elemnts which are parallelly arranged, a recording element made of a combination of the optical lens element and a photosensitive layer, an image transmission optical device having a high resolution and being very easy in the handling and preservation, a view finder, and various light-beam transmitting conducters and their connection parts.

3,801,182
OPTICAL SCANNING APPARATUS

Paul W. Jones, Billerica, Mass., assignor to Identicon Corporation, Waltham, Mass.

Filed July 10, 1972, Ser. No. 270,203
Int. Cl. G02b *27/28*
U.S. Cl. 350—156 **4 Claims**



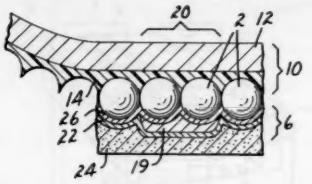
A polarized light source illuminates a surface having portions of high and low specular reflectivity. A polarization filter transmits reflected light from the surface to a detector polarized orthogonally relative to the incident light from the polarized source.

3,801,183
RETRO-REFLECTIVE FILM

Charles V. Sevelin, Amador Township, Chisago County, and Philip V. Palmquist, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 186,172, Oct. 4, 1971, abandoned. This application June 1, 1973, Ser. No. 366,040
Int. Cl. G02b *5/12*
U.S. Cl. 350—105 **11 Claims**

Legend containing substantially transparent retro-reflective sheet materials and articles to which the sheet material has been applied, the sheet material having both retro-reflective legend areas and retro-reflective background areas which are substantially indistinguishable under ordinary diffuse light viewing conditions but are clearly distinguishable under retro-reflective viewing conditions inasmuch as either the background or the legend is a more efficient retro-reflector.

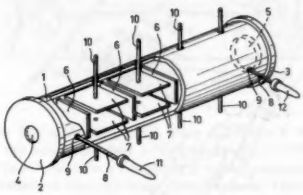


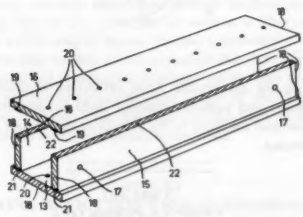
The sheet material includes a monolayer of glass microspheres of at least 1.8 refractive index having a partially light-transmissive mirror in optical connection with the rear surfaces of the beads, the retro-reflective efficiency differing in the legend and background areas. The sheet material may have a pressure-sensitive or other adhesive on the rear surface thereof.

3,801,184
CLOSED VESSEL COMPRISING A DIGITAL LIGHT DEFLECTION SYSTEM

Josef Merz, Hamburg, Germany; Johannes van Esdonk, and Joannes Franciscus Maria Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,248
Claims priority, application Germany, Nov. 6, 1971, 2155269
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 R **3 Claims**





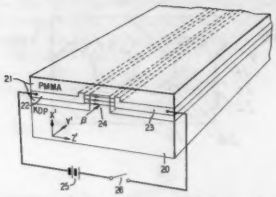
A digital light deflection system is disclosed where a group of alternating electrode pairs and prisms emersed in Kerr cell liquid is contained in a ceramic cylinder sealed at either end by a ceramic disc provided with a light-pervious window. The ceramic enclosure may be in the shape of a circular cylinder or may be a rectangular cylinder made up of rectangular plates sealed at their edges.

3,801,185

SWITCH FOR THIN-FILM OPTICS

Vellayan Ramaswamy, Lincroft, and Robert Dean Standley, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1972, Ser. No. 312,478
Int. Cl. G02f 1/26
U.S. Cl. 350—160 R 4 Claims



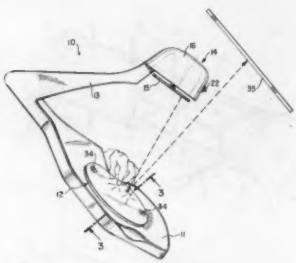
An optical switch for thin-film light guides utilizes electrically induced changes in the index of refraction of the switch material to produce the switching effect. Electrodes located along the length of the switch material and separated from it by an insulating layer induce an electric field in a region of the switch material when a voltage difference is applied to them. This causes the index of refraction to increase in that region to such an extent that a light guide is formed in the switch material, allowing transmission through the switch. Removal of the voltage destroys the guide, thereby stopping transmission.

3,801,186

MANUAL RHYTHM LIGHT INSTRUMENT

Russell Dian, 81-56 192nd St., Jamaica, N.Y.

Filed July 31, 1972, Ser. No. 276,745
Int. Cl. G02f 1/34
U.S. Cl. 350—285 2 Claims



A manually distortable light reflective medium mounted upon a base and variable colored light means for projecting light upon said medium to be reflected therefrom as rhythmic light patterns.

3,801,187

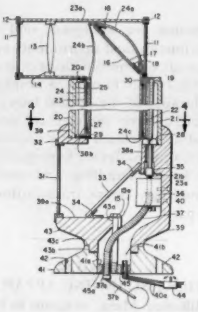
VEHICLE PERISCOPE

Cyrus McMichael, P.O. Box 255, Villa Park, Ill.

Filed Jan. 24, 1973, Ser. No. 326,450
Int. Cl. G02b 23/08
U.S. Cl. 350—301 2 Claims

A vehicle periscope and more particularly a periscope for autos and trucks, intended to be mounted beside a standard rear view mirror wherein the two controls, one for raising and lowering and the other for rotating up to and including 360°, comprises three concentric cylinders. The inner, rotatable cylinder, having a short 90° bend on one end, in which sighting mirror is rigidly affixed in an oblique position, and a 90° flared portion at opposite end; said flared portion having slots along the full circumference, which complements teeth of a drive gear.

A middle cylinder having a longer 90° bend on one end and to which, a plain clear transparent glass is affixed at both ends, and a thin convex lens, said lens mounted along the inside of the horizontal portion of the bend. Opposite end of said middle cylinder, integral tab bent outwardly, 90° to the axis of said middle cylinder; an outermost cylinder which serves as the rigid protective frame and having an integral longitudinal rounded V-guide and an open square guide along its entire length, wherein the rounded V-guide accepts and guides said tab of the middle cylinder, while the open square guide accepts and guides a square threaded nut with rounded corners.



Said vehicle periscope also includes a specially designed molded mounting base with a horizontal annular opening slightly larger than the diameter of the innermost cylinder and wherein a protective and distance compensating slightly concave glass is mounted and also the obliquely positioned viewing mirror, said mounting base also contains annular openings, 90° with said horizontal annular opening, wherein the concentric cylinders are mounted together with the other components, which include a long threaded shaft for the square threaded nut, said shaft mechanically coupled to the shaft of a miniature direct current motor which is also mounted on said base; a long geared shaft which meshes with and complements the gear teeth shape slots of the flared end of innermost cylinder, and wherein said geared shaft is mechanically coupled to a rigidly flexible closely wound spring of sufficient length, with switch for stopping and reversing polarity, as it is intended to be mounted on the dashboard of a vehicle.

3,801,188

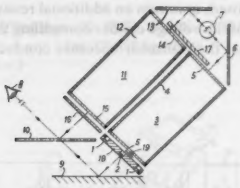
METHOD AND MEANS FOR TESTING THE COLOUR DISCRIMINATION IN VISION

Robert William Gainer Hunt, North Harrow, and Stephen John Dain, Dorset, both of England, assignors to Tintometer Limited, Salisbury, Wiltshire, England

Filed July 11, 1972, Ser. No. 270,638
Claims priority, application Great Britain, Jan. 7, 1972, 750/72
Int. Cl. A61b 3/06
U.S. Cl. 351—30 12 Claims

A method and apparatus for determining the colour discrimination of the vision of a subject in which light of a predetermined reference colour is compared with a plurality of lights of different test colours, one of which is preferably

identical with the reference colour, and diluting the coloured lights with a diluting colour, and changing the relative intensi-



ty of dilution therebetween and measuring the value of said relative dilution when the subject attempts to match the reference light with one of the test colours.

3,801,189

SPECTACLE FRAME WITH SPLIT BRIDGE AND CLIP-ON MEANS FOR SECURING SAME

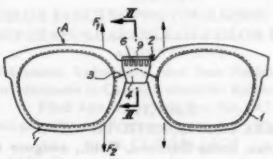
Robert Seraphin Victor Bolle, 58 route de Marchon, Ain, France

Filed June 19, 1972, Ser. No. 264,282

Claims priority, application France, June 25, 1971, 71.23289

Int. Cl. G02c *1/08, 5/02, 11/02*

U.S. Cl. 351—92 **6 Claims**



A spectacle frame of the type having a pair of lens-holding rings joined by a bridge split into two parts by a cut extending from one lens-holding ring to the other is described. The frame is shown to include a decorative spring-steel fastener removaly fitted on the front of the bridge and engaging the upper and lower surfaces of the bridge so as to hold the two parts of the bridge together. The fastener has a curved extremity engaging the lower surface of the bridge, a concave front face, and a slotted latching extremity engaging the upper surface of the bridge, the latter extremity being provided with a tongue for removal of the fastener.

3,801,190

METHOD AND APPARATUS FOR SYNCHRONOUS RECORDING OF SOUNDS ON A FILM

Johann Roth, Munchener Strasse 38, D-8061 Schwabhausen, Germany

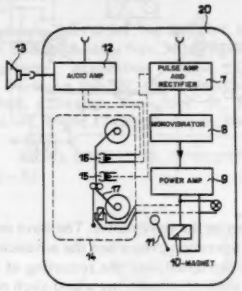
Filed Oct. 12, 1972, Ser. No. 297,016

Claims priority, application Germany, Oct. 15, 1971, 2151549

Int. Cl. G03b *31/04*

U.S. Cl. 352—5 **20 Claims**

The invention relates to a method for obtaining sound synchronous with a film, the sound events being recorded on a first tape track of a first tape recorder and pulse data are associated with the beginning of each scene of the film being recorded on a second tape track of the first tape recorder. The recorded sound events and pulse data are transferred onto a first and second track of a rapidly startable and stoppable second tape recorder. Start and stop of said second tape recorder are controlled by the pulse data, and stopping is effected with a delay which corresponds substantially to the difference of the frame sequence time and the start delay. The sound events recorded on the first tape track of the second



tape recorder are used as sound recording synchronous with the film.

The invention also relates to an apparatus for carrying out the method.

3,801,191

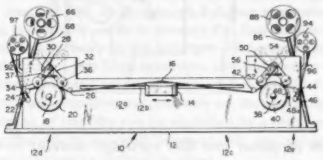
TAPE AND FILM EDITING MEANS

Peter Lawson, Romsey, England, assignor to Optasound Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,043

Int. Cl. G03b *31/00*

U.S. Cl. 352—12 **2 Claims**



A system for advancing tape over a playback head and producing the sound thereon in synchronization with the advancing of the frames on a film having the corresponding subject matter thereon through a projection system. The playback head is arranged so as to be movable relative to the tape as the tape is being directed thereover. A tape feeding means and tape takeup means are provided as well as a film advancing means and a film takeup means. Means is provided for moving the tape and film so that as the sound on the tape is produced the corresponding visual subject matter on the film is shown. If the sound produced from the tape is out of synchronization with the visual image from the film the playback head can be moved until the synchronization is restored.

3,801,192

DRIVING DEVICE FOR A SOUND RECORDING SUBSTRATE

Charles Vaast, Bezons, France, assignor to Societe Beaulieu S.A., Fontenay-sous-Bois (Val de Marne), France

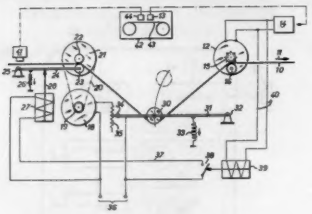
Filed Nov. 16, 1970, Ser. No. 89,878

Int. Cl. G03b *31/02*

U.S. Cl. 352—14 **2 Claims**

A motion-picture film transport apparatus including a stepwise operating pilot motor and a uniform speed slave motor, the speed of which is controlled by a slack loop forming movable element, wherein an external synchronizing source

generates synchronizing pulses acting on the stepwise operating motor and on a clutch energizable for bringing the film into operative engagement with a capstan and flywheel ar-



rangement driven by the slave motor. The slave motor remains permanently in operation even when the advancing of the film is temporarily interrupted, and the restarting of the film may thus take place without introducing sound pitch perturbations.

3,801,193

PROJECTOR AND FILM CARTRIDGE THEREFOR

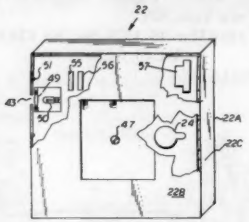
Shemtov Sasson, Rabenu Tam 11, Tel Aviv, Israel

Filed Jan. 17, 1973, Ser. No. 324,486

Claims priority, application Israel, Aug. 22, 1972, 040175

Int. Cl. G03h *23/02*

U.S. Cl. 352—72 **9 Claims**



A film projector and film cartridge therefor in which the projector comprises a housing having a front portion and a side forming portion in which the width of the front portion is greater than the width of the side forming portion. A film cartridge containing a strip of film is arranged to be detachably secured to the side forming portion of the projector and to complement the projector housing. A projecting lens is mounted on the front portion of the housing so as to be disposed in the front of the film cartridge; and the film cartridge is provided with an aperture and an associated illuminating bulb to provide the required illumination for projecting the images on the film. The cartridge includes contacts for energizing the illuminating bulb and the film feed mechanism of the projector when the cartridge is detachably secured to the side forming portion of the projector housing.

3,801,194

FADE-IN AND FADE-OUT ARRANGEMENT FOR MOVIE CAMERAS

Richard Pelte; Theo Huber, both of Munich, and Helmut Mayr, Taufkirchen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

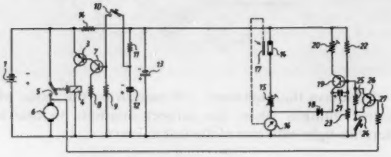
Filed Feb. 27, 1973, Ser. No. 336,363

Claims priority, application Germany, Feb. 28, 1972, 2209399

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **8 Claims**

The exposure control circuit of the camera has a photosensitive element connected in series with a moving coil instrument controlling the aperture. A normally blocked transistor has an emitter-collector circuit connected in parallel with the photosensitive element. A timing capacitor is connected from the collector to the base of the transistor. A switch is provided which, when closed, connects an additional resistor in parallel with a portion of the voltage divider controlling the base of the transistor so that the transistor becomes conductive allowing



the capacitor to discharge. A second transistor has an emitter-collector circuit connected in parallel with the additional resistor. The base of the second transistor is connected to the driving motor in such a way that the second transistor is fully conductive when the motor is deenergized, thereby allowing a rapid fade-out and is blocked when the motor is energized, causing a slow fade-out.

3,801,195

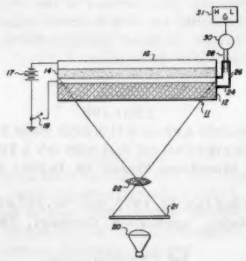
ELECTROPHORETIC IMAGING

Terence J. Davies, Santa Barbara, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 764,719, Oct. 3, 1968, Pat. No. 3,708,286. This application Sept. 27, 1972, Ser. No. 292,583

Int. Cl. B01k *5/02*; **G03g** *13/22*

U.S. Cl. 355—3 **6 Claims**



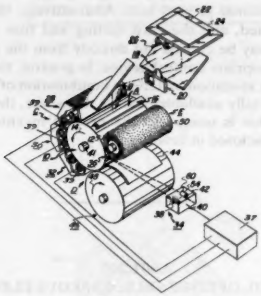
Method and apparatus for improving image density, contrast and quality and photographic speed in an electrophoretic imaging system utilizing a particulate suspension for forming the image. The method and apparatus stress a layer of the electrophoretic suspension of particles in a carrier on an electrode during imaging by applying a high frequency oscillation, preferably ultrasonic, across the imaging suspension.

3,801,196

TONER CONCENTRATION REGULATING APPARATUS

Lowell W. Knapp, Victor, and Robert P. Rebres, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 20, 1973, Ser. No. 353,029
Int. Cl. G03g 15/08
U.S. Cl. 355—3 4 Claims



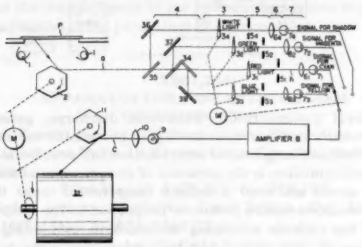
An apparatus in which the concentration of toner powder in a particulate mixture is regulated. The particulate mixture is utilized in a development system for producing a viewable toner pattern on an image bearing member.

3,801,197

COLOR ELECTROPHOTOGRAPHIC COPYING APPARATUS CAPABLE OF COLOR BALANCE ADJUSTMENT

Mikio Akiyama, Yokohama, and Isao Yoshii, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1972, Ser. No. 247,477
Claims priority, application Japan, Apr. 30, 1971, 46-29184
Int. Cl. G03g 13/22
U.S. Cl. 355—4 8 Claims



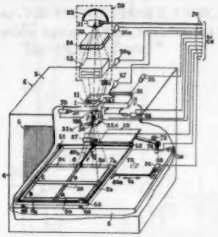
A color electrophotographic copying apparatus which is capable of adjusting color balance. With the apparatus, an original image to be copied is scanned and color-resolved, whereafter one of the color-resolved radiations is adjusted in color balance by a corresponding filter. The particular color-resolved radiation is then converted into an electrical signal, which is corrected and amplified for further adjustment of the color balance. Thereafter, the electrical signal is again converted into the form of radiation, which is scanned to form an electrostatic latent image on a photosensitive medium. The latent image is developed with a color toner corresponding thereto, and then transferred and fixed onto a transfer sheet. Such a cycle of operation is repeated for each of the resolved colors, and the resultant color images are superposed one upon another on the transfer sheet to thereby provide a final copy image with excellent color balance corresponding to the original image.

3,801,198

APPARATUS FOR AUTOMATIC HALF-TONE (DIRECT-SCREEN) OR CONTINUOUS TONE COLOUR SEPARATION WORK IN PHOTOMECHANICAL REPRODUCTION

Michel David, Arcueil, France, assignor to Logabax, Paris, France

Continuation-in-part of Ser. No. 887,087, Dec. 22, 1969, abandoned. This application Nov. 30, 1971, Ser. No. 203,182
Claims priority, application France, Dec. 23, 1968, 68.179999; Germany, Dec. 22, 1969, 1964129; Great Britain, Dec. 22, 1969, 62364/69; Italy, Dec. 17, 1969, 42258/69; Sweden, Dec. 17, 1969, 17439/69; Japan, Dec. 23, 1969, 44-103347
Int. Cl. G03b 27/58, 27/66, 27/76
U.S. Cl. 355—32 22 Claims



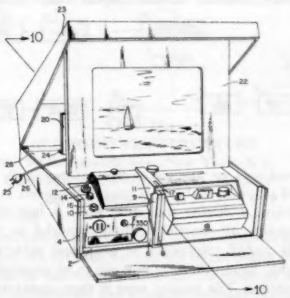
Apparatus for making color separation negatives comprises a photographic enlarger mounted on a light-tight casing. The enlarger comprises a film holder plate for receiving a color film, a lens system, a diaphragm and a shutter. A light source is provided above the film holder plate and means is provided for inserting interchangeable color filters between the light source and the film. A film holder table in the casing receives a single sheet of film large enough for four separation negatives and is movable so as to present the four quarters of the film sheet successively to the enlarger. The movement of the film holder table, the filter selection, the diaphragm opening and the shutter timing are all automatically controlled to make four separation negatives successively on the same film sheet. The exposure of the film can be modified by a timed exposure to an auxiliary light movable momentarily into position over the respective quarter of the film sheet.

3,801,199

IMAGE PROJECTION SYSTEM WITH FILMSTRIP CASSETTE

Robert Lee Kaye, 10835 Santa Monica, Los Angeles, Calif.

Filed Jan. 10, 1972, Ser. No. 216,546
Int. Cl. G03b 21/10, 21/30
U.S. Cl. 353—74 8 Claims



An image projection system with fiber optics pivotally mounted to engage a filmstrip cassette in a light coupling posi-

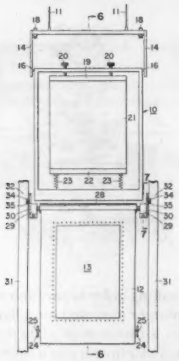
tion is described. A film engagement mechanism for advancing the filmstrip is contained within the cassette and is responsive to a projector mounted activating mechanism.

3,801,200

APPARATUS FOR MOUNTING CONTACT SCREEN IN A PROCESS CAMERA

Yukio Nishikawa, 9-2, Kamigamo Sakuramachi; Yoshio Nagao, 9-7, Kamigamo Sakuramachi, both of Kyoto, and Iwao Hirose, 720-48 Urushida Nishi Imacho, Shiga, all of Japan

Filed Dec. 15, 1972, Ser. No. 315,471
Int. Cl. G03b *27/42*
U.S. Cl. 355—18 **7 Claims**



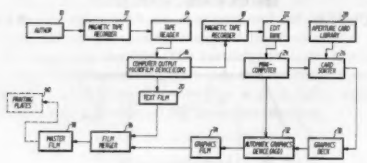
This invention provides apparatus for mounting a contact screen in a process camera such that the screen can be moved relative to a film backing in a direction perpendicular to the optical axis of the camera to and from a position where the screen is spaced from the film backing and a position where the screen is juxtaposed against the film backing without chafing of scratching the screen or film surfaces.

3,801,201

METHOD AND APPARATUS FOR AUTOMATICALLY COMBINING TEXTUAL AND GRAPHIC MATTER

Stanley L. Greenblatt, 12613 Cedarbrook Ln., Laurel, Md.

Filed Dec. 19, 1972, Ser. No. 316,548
Int. Cl. G03b *41/00*
U.S. Cl. 355—40 **18 Claims**



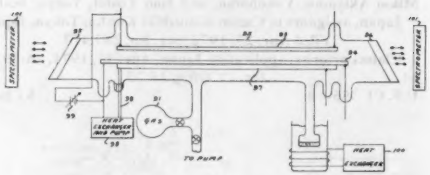
A method and an apparatus for automatically combining textual and graphical subject matter is disclosed. According to the invention, a master magnetic tape is initially prepared which contains all desired textual material as well as appropriately coded references to graphical material, such as photographic illustrations, which are to be combined with the textual material. The master tape is then converted to a film strip record of the textual material and an edit tape is also prepared on which all coded information pertaining to the graphical material is stored. The edit tape may be used to drive a card sorter which separates a selected group or deck of aperture cards identified on the master tape from an aperture card library. The selected deck of cards is then delivered to an automatic graphics device wherein the images contained in the aperture cards are transferred to a graphics film strip under control of the edit tape. This film strip is then combined with the film strip of textual material in a film merging machine to produce a final film containing the desired combination of material. This film may serve as the final output, or may be converted into appropriate printing plates for preparing a conventional printed text. Alternatively, the edit tape may be omitted, and the card sorting and film preparation procedures may be carried out directly from the master tape using an appropriate control device. In general, the apparatus of the present invention includes a combination of well known and commercially available devices. However, the automatic graphics device is unique to the present invention, and its structure is disclosed in detail.

3,801,202

STABILIZED, OPTIMIZABLE, GASEOUS ELECTRICAL DISCHARGE

Onezine P. Breaux, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 195,762, April 11, 1971, Pat. No. 3,719,899. This application Aug. 23, 1972, Ser. No. 283,017
Int. Cl. G01j *3/30;* **H01k** *1/52;* **H01j** *17/04*
U.S. Cl. 356—85 **1 Claim**



A direct current (DC), transverse discharge, gaseous, slotted hollow cathode laser having an electrically indirectly heated oxidized tungsten, or molybdenum cathode, heated to thermionic emission in the presence of cesium vapor adsorbes cesium atoms and over a defined temperature range thermionic emission occurs in inverse proportion to the temperature of the cathode stabilizing the emission, precluding the formation of "hot spots," and the relative low cathode fall voltage is varied providing an optimized amount of energy to the electrons as they are accelerated through the cathode fall voltage.

3,801,203

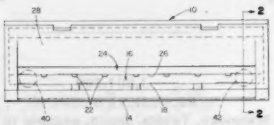
SYSTEM FOR DETECTING PARALLELISM OF SURFACE EDGES

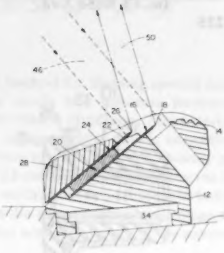
Francis B. Hyland, Scituate, and Angus W. Mackiernan, Canton, both of Mass., assignors to The Gillette Company, Boston, Mass.

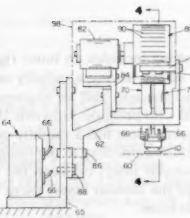
Filed May 16, 1973, Ser. No. 360,843
Int. Cl. G01b *11/26*
U.S. Cl. 356—151 **11 Claims**

A gauging system for sensing the parallelism of the edges of two surfaces includes two sensing systems, each sensing system including means to sense the position of a point on the edge of each of the two surfaces, and means to produce an

output signal as a function of the spacing of the two sensed points, the distance between the points on each edge being







sensed by two sensing systems being the same, and means to sense the output signals of the two sensing systems to provide an indication of the parallelism of the two edges.

3,801,204

APPARATUS FOR LINEAR DICHROISM DETERMINATION

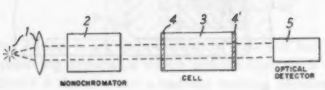
Barry Randal Jennings, 29 Stewart Ave., Shepperton, and Edward Dyson Baily, 10 Henson Close, Cranfield, both of England

Filed May 19, 1972, Ser. No. 255,185

Claims priority, application Great Britain, May 22, 1971, 16510/71; Mar. 2, 1972, 9763/72

Int. Cl. G01n *21/40*

U.S. Cl. 356—117 **7 Claims**



For ascertaining the linear dichroism of a material when subjected to an electric, magnetic, hydrodynamic or acoustic force field, the invention proposes applying such a field to a sample of the material in a cell coincident with a beam of monochromatic and parallel light of predetermined wavelength and obtaining a signal representing such dichroism (referred to in the specification as "longitudinal dichroism") from a photoelectric cell, photomultiplier or other photo-detector, whereby polarisation of the light is made unnecessary. A particular form of sample cell, defined by a series array of a plurality of individual cells or compartments, each having means for applying a said force field, is also disclosed. The apparatus is contemplated not only for laboratory testing but also (using a flow cell) for "on line" applications, for controlling a parameter of a manufacturing plant or other quality control purposes.

3,801,205

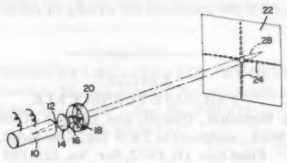
PROCESS AND DEVICE FOR THE SURVEY ALIGNMENT WITH A LASER BEAM

Eduard A. Eggenschwyler, Riggisberg, Switzerland, assignor to Pulfer AG, Bern, Switzerland

Continuation of Ser. No. 11,316, Feb. 13, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,859

Int. Cl. G01c *1/02*

U.S. Cl. 356—138 **14 Claims**



A process and system for survey alignment along a straight line in which a columnated laser beam is projected along the line to be aligned from adjacent its starting point to a target plate at an end point thereon, the laser beam being diffracted intermediate such points, and preferably adjacent the starting point, by means of at least one set of two closely spaced parallel edges passing entirely through the beam at an angle, preferably perpendicular, to the beam axis, the spacing of the edges of such set being substantially less than the thickness of the beam. The result of the diffraction is a linear diffraction pattern of beam images tapering with increasing distance from the beam axis to eventually approximate a linelike thinness. The thin images at the opposite ends of this pattern define a straight line which passes through the beam axis independently of the position of the set of edges within the beam and thus locates the beam axis in one direction. Preferably two such sets of edges are provided, arranged in angular, preferably perpendicular, relation so as to locate the beam axis in two directions. The sets of edges may be constituted by a tensioned filament or a line inscribed on a transparent plate.

3,801,206

BALL POINT PEN STRUCTURE

Nathan Poritz, 90 Greenwich Ave., New York, N.Y.

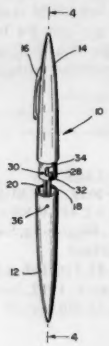
Filed Mar. 15, 1973, Ser. No. 341,499

Int. Cl. B43k *27/04, 27/12*

U.S. Cl. 401—29 **12 Claims**

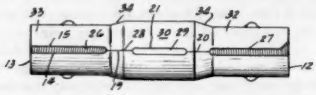
A ball point pen body includes a pair of oppositely disposed ink cartridges. An aperture is formed at each end of the body and segments of the body are forced together to simultaneously project a ball point end of each cartridge through one of the apertures. The base end of each ink cartridge is fixed to a separate body segment by engagement with a self seating split ring retainer. Relative movement of the body segments toward

or away from each other is guided by a track formed in a telescoping sleeve which frictionally holds the body segments



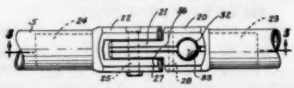
in their selected relative positions with the ball points either projecting from the apertures for writing or retracted into the body.

3,801,207
FAIL-SAFE TURNBUCKLE
Edward J. Herbenar, Detroit, and Louis E. Calvin, Warren, both of Mich., assignors to TRW Inc., Cleveland, Ohio
Filed Feb. 10, 1972, Ser. No. 225,185
Int. Cl. F16b *7/06*
U.S. Cl. 403—46 **4 Claims**



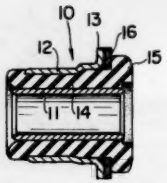
An automotive steering linkage turnbuckle formed of a rolled metal sheet having side projections to form abutment surfaces providing split ends to the formed turnbuckle sleeve with a central opening intermediate the projections, the turnbuckle having a bulged central portion of increased diameter, the threads, of opposite hand from either end, running out gradually as the inner diameter of the turnbuckle increases to provide a fracture point at the last full-depth thread so that in case of failure of the turnbuckle, separation of the elements will not occur.

3,801,208
PIVOT LOCKING MEANS
Elroy E. Bourgraf, Cincinnati, and Kenneth R. Self, Washington, both of Ohio, assignors to Ferno-Washington, Inc., Greenfield, Ohio
Division of Ser. No. 52,535, July 6, 1970, Pat. No. 3,653,079.
This application Oct. 21, 1971, Ser. No. 191,393
Int. Cl. F16c *11/10*
U.S. Cl. 403—95 **7 Claims**



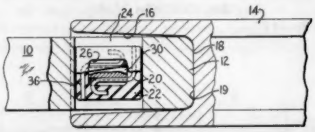
A pivot lock for detachably and pivotally interconnecting a pair of opposing members, such as the frame parts of a breakaway stretcher, said lock having opposite parts one of which is bifurcated and mounts a pivot pin, the other part being in the form of a tongue having a pin receiving slot therein together with a pin engaging latch member adapted to releasably maintain the pin in the slot.

3,801,209
RESILIENT BUSHING
Chikara Matsuoka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Jan. 18, 1973, Ser. No. 324,808
Int. Cl. B65d *7/48*
U.S. Cl. 403—225 **5 Claims**



A resilient bushing includes an inner rigid sleeve, an outer concentric rigid sleeve having a radially outwardly extending flange at one end thereof, and an elastomeric tubular insert held under radial compression between the inner and outer sleeves. The tubular insert has a radially outwardly extending flange at the end corresponding to the flanged end of the outer sleeve. On the tubular insert between the flange of the outer sleeve and that of the tubular insert there is fitted an annular disc of a synthetic resin.

3,801,210
WIRE-CLIP RETAINING MEANS FOR TIP-RETAINING PIN
Lloyd K. Heinold, and Eugene L. Helton, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 12, 1971, Ser. No. 188,016
Int. Cl. F16b *3/00*
U.S. Cl. 403—318 **5 Claims**



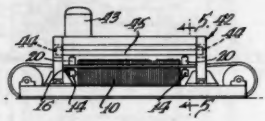
A retaining means for an earth-working tip member which means consists of a wire clip member bonded into a section of resilient material, which clip member and section engage and secure a tip-retaining pin or bar member. The wire clip member and section firmly hold the tip-retaining pin in place during normal use but readily release it when desired for removal thereof and release of the tip member. In operative position, the wire clip and section position the pin in such a manner that it is not a load-carrying member.

3,801,211

PAVEMENT GROOVING PROCESS AND APPARATUS

Glen E. Perkins, 1428 40th Ave., Rock Island, Ill.

Filed Mar. 3, 1971, Ser. No. 120,636
Int. Cl. E01c *11/24*
U.S. Cl. 404—75 4 Claims



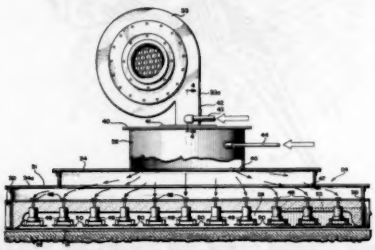
Apparatus and method for forming spaced parallel grooves in the surface of newly laid concrete pavement while the concrete is still in plastic condition, characterized by bodily moving over the surface of the plastic concrete pavement a rotating roller having spaced parallel outwardly projecting ribs on its periphery and simultaneously pressing the rotating roller against the upper surface of the pavement to imbed said ribs to their full depth in the pavement and to engage the peripheral surface of the roller with the surface of the pavement.

3,801,212

HEATER FOR ASPHALT CONCRETE ROADWAYS AND THE LIKE

Earl F. Cutler, Lawrence, Kans., assignor to Cutler Repaving Associates, Incorporated, Lawrence, Kans.

Continuation-in-part of Ser. No. 129,404, March 30, 1971, Pat. No. 3,724,445. This application Aug. 18, 1972, Ser. No. 282,005
Int. Cl. E01c *23/14*
U.S. Cl. 404—95 21 Claims



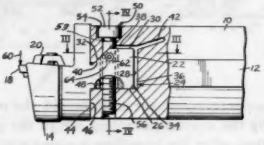
Disclosed herein is an embodiment of a heater for asphalt concrete repaving apparatus which utilizes fuel, such as pentane, to direct a flame onto a radiant heating element. The flame is redirected radially outwardly along the radiant heating element so the flame will not impinge on the road surface and only radiant heat is used. Such radiant heat will penetrate the road surface to a depth of 1 inch or more in a relatively short period of time whereupon the heated and softened asphalt together with portions thereof beneath the heated portion are excavated. Additional heat is applied to the excavated material to further soften it and small quantities of new asphalt material may be added if desired before the reworked material is again laid to form a road surface.

3,801,213

ADJUSTABLE DOVETAIL BORING BAR

William C. Eversole, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 89,186, Nov. 13, 1970, abandoned. This application May 25, 1972, Ser. No. 257,051
Int. Cl. B23b *29/34*; B23q *3/12*
U.S. Cl. 408—181 9 Claims



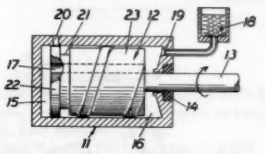
The specification discloses a boring bar having shanks with a head mounted on one end and with a dovetail tongue and groove connecting the head to the shank. A clamp screw extending through the groove and also through the tongue is provided for clamping the shank and the head together.

3,801,214

FLUID PRESSURE CREATING ROTARY DEVICE

Nils Gunnar Jonsson, 36, Rainbow St., Benoni, South Africa

Filed Apr. 3, 1972, Ser. No. 240,411
Int. Cl. F01d *5/00*
U.S. Cl. 415—72 22 Claims



A fluid pressure creating rotary device comprises a member with a circularly cylindrical inner surface and a member with a circularly cylindrical outer surface that cooperates with said inner surface. When the two members rotate relative each other, a shallow groove in one of the two cooperating surfaces brings fluid from a fluid reservoir to an annular pressure groove in one of the members. The pressure of the fluid increases continuously along the transporting groove to the pressure groove from which the pressure can be transmitted through an outlet orifice to a fluid piston or the like which is to be actuated by the pressure fluid. A valving action is achieved simply by having the two cooperating members axially movable relative to each other so that the pressure outlet can be isolated from the pressure groove and connected to a drain chamber. The device is shown as part of a V-belt variator (FIG. 2), and as part of a clutch (FIG. 4 as well as FIG. 7).

3,801,215

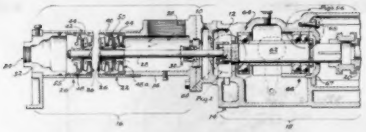
AXIAL THRUST LIMITING DEVICE

William C. Osborne, Seneca Falls, N.Y., assignor to Goulds Pumps Incorporated, Seneca Falls, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,341
Int. Cl. F01d *25/16*; F04d *29/20*
U.S. Cl. 415—131 10 Claims

In a multi-stage centrifugal pump having pairs of cooperating diffusers and impellers with associated bearing means and characterized in that the impellers are keyed for rotational movement with and axial floating movement relative to a pump shaft and that while an impeller remains in a floating

condition its thrust load is transferred through its associated bearing means to its cooperating diffuser and when in a non-floating condition its thrust load is applied to the pump shaft and thereby to an axial thrust bearing therefore after wearing of its associated bearing means prevents transfer of its thrust



load to its cooperating diffuser as aforesaid, the improvement for prolonging the overall operating life of the pump by extending the time after the impellers become non-floating before a maximum predetermined thrust load is applied to the axial thrust bearing.

3,801,216

INSTALLATION FOR ADJUSTING POWER TURBINE GUIDE BLADES IN TWIN-SHAFT GAS TURBINE ENGINES, ESPECIALLY FOR THE DRIVE OF MOTOR VEHICLES

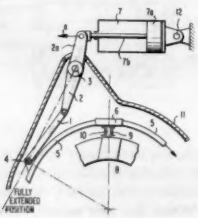
Hilbert Holzhauer, and Alois Rohra, both of Munich, Germany, assignors to Motoren-Und Turbinen-Union Munchen GmbH, Munchen, Germany

Filed Aug. 13, 1971, Ser. No. 171,631

Claims priority, application Germany, Aug. 19, 1970, 2041109

Int. Cl. F01d *17/00, 17/08*

U.S. Cl. 415—151 **17 Claims**



An installation for adjusting the guide blades of a power turbine in twin-shaft gas turbine engines, which serve in particular for the drive of motor vehicles, whereby the movement of an adjusting piston is adapted to be transmitted to a rotatable ring gear which adjusts the guide blades by way of bevel gears; a lever system thereby forms the transmission means for the nonlinear translation of the movements of the adjusting piston into angular movement of the adjustable guide blades within the operation range from "drive" to "braking."

3,801,217

FLUID MACHINES

Michael Leslie Ryall; Harold Henry Anderson, and Guido Pezzani, all of Glasgow, Scotland, assignors to Weir Pumps Limited, Glasgow, Scotland

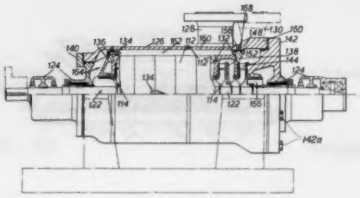
Filed Jan. 11, 1972, Ser. No. 216,960

Claims priority, application Great Britain, Feb. 3, 1971, 3851/71; June 18, 1971, 28654/71

Int. Cl. F04d *17/12, 29/44*

U.S. Cl. 415—199 A **7 Claims**

A multi-stage centrifugal pump which includes a plurality of stages the impellers of which are mounted on a shaft common to all stages. All the stages are mounted within a tie-frame carrying pump inlet and delivery connections and are arranged between an inlet end member and a delivery end member. The end members and the casings of each stage are arranged in abutting relationship so that they are urged in a direction towards the inlet member by the delivery pressure acting on a



combination of a delivery end cover and the delivery end member, the inlet end member being held against movement relative to the tie-frame while the delivery end member is capable of movement relative to the tie-frame, sealing means being provided between the tie-frame and the movable member.

3,801,218

FLUID FLOW BLADES

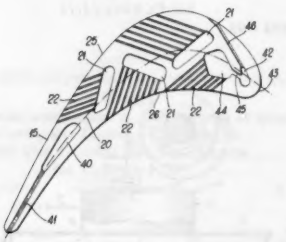
Alan Moore, Bristol, England, assignor to Rolls Royce (1971) Limited, London, England

Filed Aug. 25, 1972, Ser. No. 283,661

Claims priority, application Great Britain, Aug. 26, 1971, 40019/71

Int. Cl. F01d *5/18*

U.S. Cl. 416—97 **9 Claims**



An aerofoil-shaped blade for a gas turbine engine has longitudinally extending cooling fluid passages, and from each passage a group of transverse cooling fluid holes communicates with one of the outer surfaces of the blade. The holes are arranged to be relatively long so that the greater part of the heat transfer from the blade to the cooling fluid takes place in the holes.

3,801,219

CONTROLLABLE PITCH MARIPROPELLER

John T. Parsons, and Donald E. Goodland, both of Traverse City, Mich., assignors to Jerome A. Gross, St. Louis, Mo.

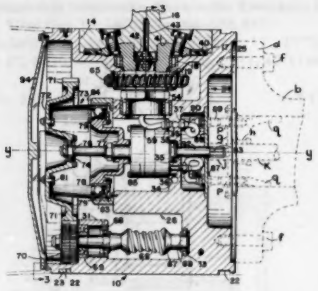
Filed May 5, 1971, Ser. No. 140,435

Int. Cl. B63h *3/08*

U.S. Cl. 416—157 **3 Claims**

A hub for a controllable pitch marine propeller has a one-piece casting mounting the blade spindles, irreversible pitch

controllable mechanism, and a rotary motor control and gear reducer. Although low in weight and small in overall size, exceptionally precise control over blade angles is maintained and wear is minimized.



3,801,220

SEALING ELEMENT FOR A TURBO-MACHINE

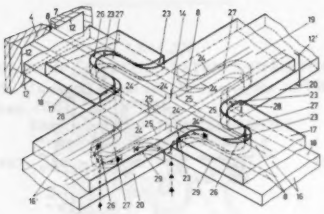
Wolfgang Beckershoff, Fislisbach, Switzerland, assignor to Brown Boveri-Sulzer Turbomaschinen AG, Zurich, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,897

Claims priority, application Switzerland, Dec. 18, 1970, 18783/70

Int. Cl. F01d *5/06*

U.S. Cl. 416—198 4 Claims



An arrangement for packing expansion joints on turbomachines and particularly packing the axially extending gaps provided between adjacent blading of a blade row and circumferentially extending gaps provided between each blade row and an adjacent row of blade segments which serve to provide axial spacing between adjacent rows of blading on the rotor of the machine includes two sets of packing strips inserted respectively in grooves provided along the confronting sides of the blading which establish the axially and circumferentially extending gaps that form intersections with each other. Each packing strip of each set is constituted by two layers which are shifted in a longitudinal direction relative to each other such that one layer of each strip of each set continues across each intersection while an end of the other layer of each strip of one set terminates at an intersection at the side of and is joined to the layer of the other set which continues across that intersection, thus providing a complete sealing not only along the axially and circumferentially extending gaps but also at their intersections.

3,801,221

IMPELLER AND METHOD FOR MANUFACTURING SAID IMPELLER

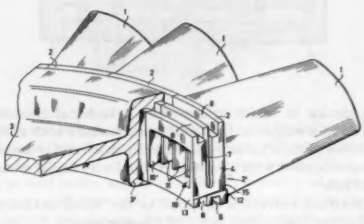
Rudolf Zlotek, Mutters, near Innsbruck, Austria, assignor to Willi Seeber, Bozen, Italy

Filed Sept. 21, 1971, Ser. No. 182,383

Claims priority, application Germany, Sept. 21, 1970, 2046486

Int. Cl. F04d *29/34*

U.S. Cl. 416—214 25 Claims



An impeller of metal for ventilators, pumps, fans for internal combustion engines and fans for air-conditioning equipment composed of root portions formed on the blades to form a closed ring which is engaged by the rim of a hub.

3,801,222

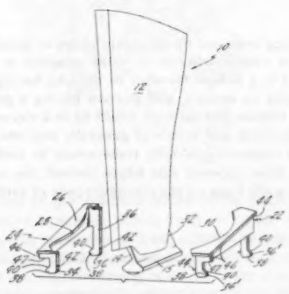
PLATFORM FOR COMPRESSOR OR FAN BLADE

John A. Violette, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 28, 1972, Ser. No. 229,872

Int. Cl. F01d *5/32*

U.S. Cl. 416—220 8 Claims



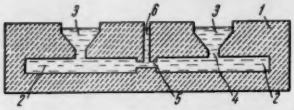
The platform of a compressor or fan blade is fabricated into two complementary separate halves adapted to surround the root of each blade to define together with a plurality thereof a smooth aerodynamic surface and each half having depending arms at the ends adapted to fit into the dovetail of the blade disc transmitting the centrifugal load of the platform independent of the blade loads.

3,801,223

DEVICE FOR PRODUCING JETS OF LIQUID METAL

David Grigorievich Bykhovsky, Konjushenny Pereulak 1/6, kv. 18, Leningrad, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,809
Int. Cl. H02n 4/20
U.S. Cl. 417—50 2 Claims



A device in which at least two cylindrical chambers are placed in a magnetic field and communicate with each other via holes in their cylindrical walls. Each of said chambers is in communication with a container filled with liquid metal via an axial hole.

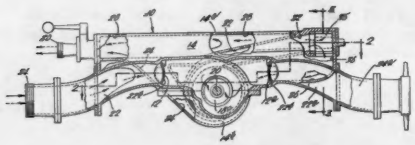
Electrical current is supplied to the metal enclosed in the containers from unlike poles of a power source.

3,801,224

CENTRIFUGAL PUMP ASSEMBLY

H. Alfred Eberhardt, 1630 Harvard Ln., Paoli, Pa.

Division of Ser. No. 206,340, Dec. 9, 1971, Pat. No. 3,726,308.
This application Dec. 18, 1972, Ser. No. 316,034
Int. Cl. F04b 23/04; F16k 15/00
U.S. Cl. 417—62 4 Claims



A device arranged for alternate series or parallel operation of plural pumps wherein a valve adapted to be pivotally mounted in a hollow member or the like having a valve seat comprising an arcuate wall portion having a pair of parallel top and bottom end surfaces which lie in a circumference of a common circle and a pair of generally oval-shaped side wall portions disposed generally transversely to said arcuate wall portion from opposite side edges thereof, the outer edges of the side walls lying on the circumference of said common circle.

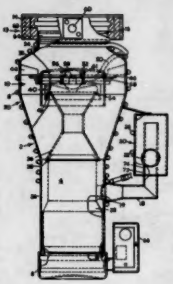
3,801,225

VACUUM PUMPS

Basil Dixon Power, Sussex, England, assignor to The British Oxygen Company Limited, London, England

Continuation-in-part of Ser. No. 35,272, May 6, 1970, abandoned. This application May 12, 1972, Ser. No. 252,627
Int. Cl. F04f 9/06
U.S. Cl. 417—153 8 Claims

This invention provides an integral combination of a vapour vacuum pump, a baffle and an isolation valve as a single unit which offers substantial economies in construction and volume, compared with known pumps of the same performance, and which has only a single flange for attachment to the equipment to be evacuated.

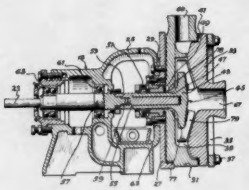


3,801,226

PUMP IMPELLER

Robert H. Bevan, Romulus, and Vincent D. Buffone, Seneca Falls, both of N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 67,866, Aug. 28, 1970, Pat. No. 3,676,014.
This application Mar. 30, 1972, Ser. No. 239,649
Int. Cl. F01d 1/02
U.S. Cl. 416—241 4 Claims



A pump impeller, especially useful in the pumping of corrosive and abrasive liquids, includes a unitary blade-shaft member of a material such as a corrosion resistant vitreous or ceramic material, which is impracticable for threading or other such shaping operations or has insufficient strength to withstand normal forces on threads or other such elements thereof. To provide for affixation to means for rotating the impeller in a pump, a threadable shaft extension is employed, inserted into and cemented in place in a hollow portion of the blade-shaft member and threaded or otherwise formed or machined at its other end for connection with suitable driving means. By making the blade-shaft member so that the corrosion-resistant shaft portion is long enough to extend past a seal, contact of the pumped liquid with the impeller is limited to the corrosion-resistant part thereof.

Also disclosed are pumps and motor-pump combinations including the mentioned impellers, as well as methods for the manufacture of the impellers.

3,801,227

SWASH-PLATE TYPE COMPRESSOR FOR AIR CONDITIONING OF VEHICLES

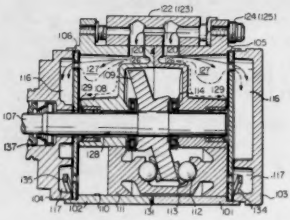
Shozo Nakayama, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan

Filed Oct. 13, 1971, Ser. No. 188,897

Claims priority, application Japan, Oct. 17, 1970, 45-91328; Oct. 17, 1970, 45-91329; Mar. 24, 1971, 46-17406

Int. Cl. F04b *27/08*

U.S. Cl. 417—269 8 Claims



A swash-plate type compressor for air conditioning of vehicles characterized by a complete, improved structural arrangement wherein the column-shape cylinder blocks themselves combined in an axial alingment form the outer frames of the compressor to establish reasonable manufacturing and use thereof, a simplified sealing structure for junction of the two cylinder blocks by arranging individual but cooperable passages, of the refrigerant circulating in the refrigerating circuit and returned to the compressor, in each cylinder block and an internal lubrication system simplified by the omission of the oil pump and carrying out complete distribution of the lubricating oil to the moving machine parts of the compressor.

3,801,228

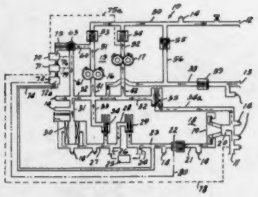
FUEL PUMP CONTROL SYSTEM AND METHOD

Milton W. Mueller, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 26, 1972, Ser. No. 220,782

Int. Cl. F04b *49/00*

U.S. Cl. 417—282 15 Claims



An internal control system for parallel pump fluid pumping systems. The control system acts to open a low-pressure pathway receiving the discharge from at least one of the pumps in response to internally sensed outlet requirements. The open pathway results in recirculation of low-pressure pumped fluid through a portion of the system while the outlet is supplied from another of the parallel pumps. The control system operates by sensing pressure from various points within the fluid system.

3,801,229

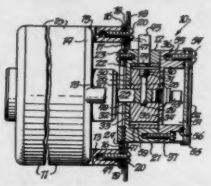
COMBINED MOTOR AND ROTARY FLUID DEVICE

Standford A. Henderson, 49 Wansfell Rd., Snyder, N.Y.

Filed July 27, 1972, Ser. No. 275,529

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—359 9 Claims



A combined motor and rotary fluid device including a fluid unit having a housing and a rotor within said housing, motor means, and a mounting structure for mounting said fluid unit relative to said motor means including a plurality of posts extending outwardly from said motor for supporting rings clamping a resilient diaphragm therebetween on which said fluid unit housing is mounted, and a shaft extending outwardly from said motor for mounting the rotor of said fluid unit, said resilient diaphragm permitting a floating movement of said housing.

3,801,230

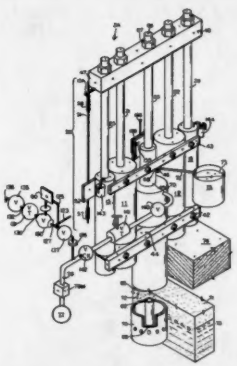
PUMPING APPARATUS AND METHOD

Raymond L. Brown, 1510 W. 11th, Liberal, Kans.

Filed Mar. 6, 1973, Ser. No. 338,566

Int. Cl. F04b *35/00*; E21b *43/00*

U.S. Cl. 417—403 8 Claims



A differential of gas pressure between the wellhead and another pressure is applied across each of a pair of power cylinders whereby such pistons drive a piston bracket. A pair of counterbalance cylinders powered by pressurized gas assist in support of the well rod string, are tied to the same piston bracket and are automatically maintained at an adjustable pressure created by the piston bracket motion. The piston bracket operates a reversing valve to change the direction of power cylinder piston travel as the piston bracket and the pump shaft attached thereto complete cycles of operation; the differential of gas pressure is developed between the wellhead operating pressure and sales line pressure so that substantially no loss of gas is usually effected from production while providing alternative differential gas pressure systems alternatively tied thereinto to permit continued operation of this apparatus under unusual conditions.

3,801,231
PUMP AND ELECTRIC DRIVE MOTOR UNIT

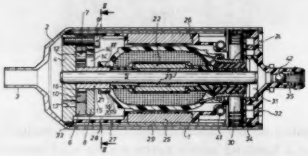
Hermann Nusser, Asperg, Germany; Hendricus van Eeden, Johannesburg, South Africa, and Jurgen Ebert, Stuttgard-Ost, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 22, 1972, Ser. No. 282,780

Claims priority, application Germany, Aug. 24, 1971, 2142258

Int. Cl. F04b *17/00*

U.S. Cl. 417—410 **12 Claims**



There is described a pump assembly which, in a unitary structure, comprises a pump proper and an electric pump drive motor, both contained in a common housing. A metal disc, forming part of the pump housing, is positioned at one end inside the common housing and supports a stationary shaft extending coaxially with and along the entire length of the pump assembly. On the stationary shaft journals the armature of the drive motor and the pump rotor member rotationally coupled to the armature.

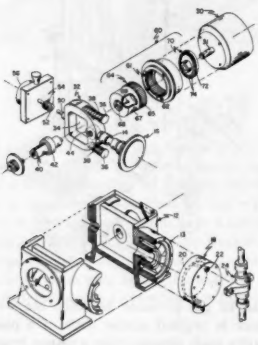
3,801,232
DIAPHRAGM PUMP

Enrique Locsin Kilayko, Auburndale, Mass., assignor to Precision Control Products Corporation, Waltham, Mass.

Filed Aug. 15, 1972, Ser. No. 280,816

Int. Cl. F04b *43/00, 45/00*; **F15b** *15/24*

U.S. Cl. 417—413 **1 Claim**



A diaphragm pump having a housing, an operating rod projecting within the housing and mounted therein for reciprocating translational movement, a rotatable camshaft mounted in the housing for reciprocating the operating rod, an electric motor for driving the camshaft and strain wave speed reducing gearing interposed between the motor and camshaft for rotating the camshaft at slow speed from the relatively high speed motor. Such gearing includes an external ring gear having internal teeth fixed to the housing, a deformable internal strain gear having external teeth in cooperative engagement with the ring gear, the strain gear being drivingly connected to the camshaft, and a strain inducer mounted internally of the strain gear in cooperative engagement therewith, the strain inducer being drivingly connected to the motor. The pump also includes a yoke fixed to the operating rod within the housing, cam and follower means interposed between the camshaft and yoke for driving the yoke in one direction, spring means interposed between the yoke and the housing for moving the yoke in an opposite direction and adjustable stop means for limiting movement of the yoke in the opposite direction to establish an adjustably predetermined stroke of the pump.

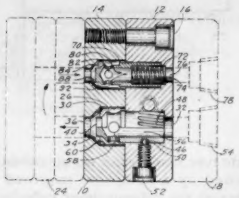
3,801,233
VALVE ASSEMBLIES

Philip J. Simpson, Plymouth, Mass., assignor to Maurice R. Boiteau, West Newton, Mass., a part interest

Filed Dec. 7, 1971, Ser. No. 205,515

Int. Cl. F04b *23/00*; **F16k** *15/02, 31/52*

U.S. Cl. 417—441 **5 Claims**



There is disclosed in the specification a valve assembly adapted to be interposed between a high pressure precision metering pump and its usual mounting bracket. The valve assembly includes a manually operated valve for interrupting the flow of liquid from a master pump to the metering pump whenever the metering pump is to be replaced. There are also included in a common body with the manually operated valve, automatic valves for isolating one or two high pressure outlets whenever the metering pump is stopped either intentionally or as a result of a malfunction.

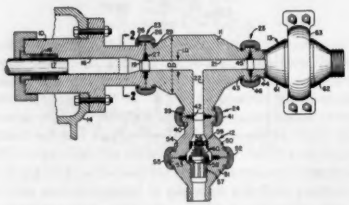
3,801,234
FLUID END FOR A PLUNGER PUMP

William W. Love; Everett H. Lock; William C. Maurer, and Joe K. Heilhecker, all of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 179,705, Sept. 13, 1971, abandoned. This application May 14, 1973, Ser. No. 359,806

Int. Cl. F04b *39/14*

U.S. Cl. 417—454 **6 Claims**



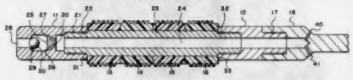
An improved cylindrical fluid end construction for a plunger pump includes a cylinder body, a crossbore body, and suction and discharge valve cages. The components are assembled together by quick-disconnect couplings having self-energizing seals for pressure sealing the joints. The diameters of flow passages formed in the crossbore body are less than that of the pump plunger.

3,801,235

PUMP PLUNGER HAVING ALTERNATE RIGHT AND LEFT HAND SPIRAL THREADS

Bobby L. Douglas, Ennis, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 20, 1972, Ser. No. 236,045
Int. Cl. F04b *21/04*; **F16j** *1/02, 9/04*
U.S. Cl. 417—554 **4 Claims**



Adjacent discrete plunger sections having alternate right and left hand spiral threads are loosely fitted on a cylindrical mandrel, one end of which has a threaded valve cage with a ball and seat therein, a shoulder section being threadedly engaged with the other end of the mandrel. The plunger sections are compressed by further increasing rotational pressure to the threaded shoulder section. Plunger sections are essentially nylon (polyamide) having a fiber glass filler material. Because of the creep of the material, end compression is applied in an amount which causes a squeeze of approximately 1/32 inch per foot of plunger section to purposely induce creep in the manufacturing process. After approximately 24 hours, during which the material creeps about 75 percent of its one year creep, the plunger assembly is centerless ground to the desired outside diameter.

In addition to the discrete plunger sections being alternately right and left hand threaded, each section has its end portion unthreaded. The unthreaded end portion provides for pressure change and also a space for sand to fall out. The use of the unthreaded section and the alternately changing thread directions causes flow reversals and turbulent flow conditions which reduce slippage rate and increases the efficiency of the pump. The alternate right and left hand portions reduce the torque in the system and also reduce the flow rate through the spiral by causing direction changes.

ERRATUM

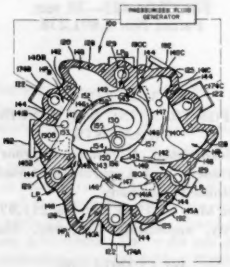
For Class 417—90 see:
Patent No. 3,801,167

3,801,236

ENGINE

John N. Hinckley, Beloit, Wis., assignor to Beloit College, Beliot, Wis.

Division of Ser. No. 860,684, Sept. 24, 1969, Pat. No. 3,684,413, which is a continuation-in-part of Ser. No. 812,656, April 2, 1969, abandoned. This application July 24, 1972, Ser. No. 274,740
Int. Cl. F01c *1/00, 11/00*; **F04c** *17/00*
U.S. Cl. 418—12 **19 Claims**



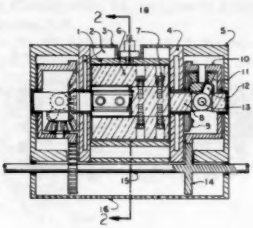
A rotary fluid engine powered by externally pressurized working fluid including a rotor and a plurality of swinging arms positioned to engage with and impart a torque force to the rotor when the arms are driven sequentially inward by the selective admission of charges of externally pressurized working fluid. A first segment on the rotor surface engages the free end of each arm as the arm is driven inwardly and a second segment on the rotor surface operates to return the arm outwardly after the power impulse is completed. Valving and conduit means are provided to control the direction of the working fluid to the arms and exhaust means are provided to exhaust spent working fluid from the engine. In one embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid sequentially against said arms so that the engine operates as a simple engine. In a second embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid first against one of said arms at a high pressure and secondly against another arm at a relatively lower pressure so that said engine operates as a compound engine. In a third embodiment, transfer valve means are provided which permit said engine to be switchable between said simple and compound modes of operation. The rotor surface may include a plurality of said first and second segments so that each arm will transmit a corresponding plurality of power impulses to the rotor for each complete rotor revolution.

3,801,237

ROTARY ENGINE OR PUMP

John Phillip Gotthold, 255 Bernardo, No. 8, Sunnyvale, Calif.

Filed May 17, 1972, Ser. No. 254,053
Int. Cl. F01c *1/00*; **F04c** *17/00*; **F02b** *55/14*
U.S. Cl. 418—36 **7 Claims**



This invention pertains to a rotary internal combustion engine and specifically to a rotary engine deriving its motive force from pressure applied to piston vanes which rotate axially inside of a cylinder while they accelerate and decelerate in relation to each other to create relative movement between them. It may also be used as a pump or as a steam engine.

3,801,238

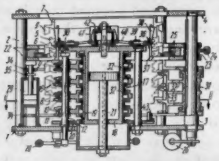
DEVICE FOR TAKING OFF ANNULAR-SHAPED RUBBER PRODUCTS FROM THE RINGS OF A DRUM-TYPE COMPOSITE FORMER

Arsenty Vasilievich Yavorsky, ulitsa Zatonskogo, 14v, kv. 70; Rostislav Arsentievich Tkachuk, ulitsa Generala Potapova, 6, kv. 3; Jury Grigorievich Ostapchuk, ulitsa Komissara Rykova, 3, kv. 39, all of Kiev; Grigory Lvovich Farber, ulitsa Kutuzova, 33a, kv. 66, Tula; Viktor Stepanovich Bondar, ulitsa Pravdy, 1/2, kv. 106, Moscow, and Gennady Vasilievich Pryalochnikov, Pushkinsky proezd, 4b, kv. 8, Tula, all of U.S.S.R.

Filed Mar. 27, 1972, Ser. No. 238,508
Int. Cl. B29h *7/22*
U.S. Cl. 425—38 **8 Claims**

A device for taking off annular rubber products from the rings of a drum-type composite former, comprising a

mechanism to disjoin said composite former into separate rings carrying finished products, said mechanism incorporating a plurality of movable dogs adapted to engage the former rings from inside and provided with a drive to drawn them apart axially with respect to the former, as well as a mechanism to consecutively take off finished products from



the separate former rings and a means to consecutively transfer the separate former rings carrying finished products from the dogs of said mechanism to disjoin said composite former into separate rings carrying finished products, towards said mechanism to take off finished products from the separate former rings.

3,801,239

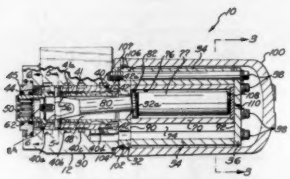
CONTROLLER FOR FLUID OPERATED DEVICE

Bernard J. Larson, New Hope, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 3, 1972, Ser. No. 240,418

Int. Cl. B62d *5/06;* **F15b** *9/00*

U.S. Cl. 418—61 B **6 Claims**



A controller for a fluid pressure operated device has a section for metering control fluid through the controller to the pressure operated device. The meter section of the controller is enclosed in a pressurizable housing. A static pressure head equal to the control fluid pressure within the meter is applied to the casing and acts on the external surfaces of the meter to eliminate leakage out of metering elements during operation of the controller and to thereby reduce or eliminate "slip" between an input member of the controller and the fluid pressure operated device. Additionally, this pressure head is used to create a frictional braking force resisting movement of the movable element of the meter.

3,801,240

ROTARY ENGINE OF TROCHOIDAL DESIGN

Max Ruf, Obereisesheim, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H., Lindau, Bodensee, both of Germany

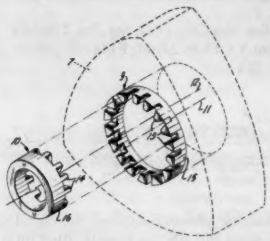
Filed Apr. 6, 1973, Ser. No. 348,715

Claims priority, application Germany, May 9, 1972, 2222568

Int. Cl. F01c *1/02*

U.S. Cl. 418—61 A **6 Claims**

A rotary internal combustion engine of trochoidal type having phasing gearing between the housing and the rotor, wherein the large gear borne by the rotor and the smaller gear borne by a side wall and through which the shaft passes, are in engagement by means of teeth extending axially from their end faces. This arrangement permits the use of gears of



smaller outer diameter, hence allowing more space on the rotor side face for seals, a larger and stronger shaft passing through the small gear, and stronger gear teeth.

3,801,241

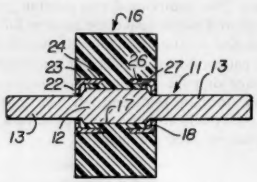
PUMP IMPELLER CONSTRUCTION

Thomas B. Martin, Danville, and Ferdinandus A. Pieters, Concord, both of Calif., assignors to Micropump Corporation, Concord, Calif.

Filed Feb. 8, 1973, Ser. No. 330,759

Int. Cl. B23p *9/00;* **F01c** *21/00;* **F04c** *15/00*

U.S. Cl. 418—152 **8 Claims**



Gear pump impellers formed of Teflon because of the softness and slipperiness of the material are difficult to connect to a metallic shaft. Yet Teflon is a very good material for gear pump impellers because of its low co-efficient of friction, chemical inertness and ability to withstand high temperatures and extreme temperature variations. In this invention a portion of the plastic is confined between a rigid central shaft spline and a cup rotatable with the shaft so that the plastic cannot flow without two-dimensional or three-dimensional distortion or tearing, both of which are resisted by the plastic.

ERRATUM

For Class 425—38 see:
Patent No. 3,801,238

3,801,242

APPARATUS FOR TREATING AND WINDING UP SPUN FILAMENTS

Ernst Bauch, Bordesholm, Germany, assignor to Neumunstersche Maschinen- Und Apparatebau Gesellschaft MBH, Neumunster/Holstein, Germany

Filed May 10, 1972, Ser. No. 251,974

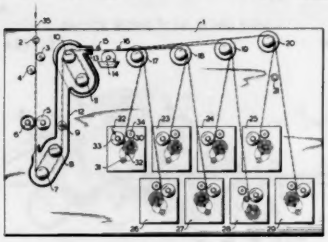
Claims priority, application Germany, May 14, 1971, 2123979

Int. Cl. D01d *5/00*

U.S. Cl. 425—66 **14 Claims**

An apparatus for treating and winding up the filaments of groups of filaments discharged from a row of spinnerets

located in a vertical plane, has treating and take-up units whose width is less than the distance between two adjacent spinnerets between which the units are located. Each unit has treating means transporting groups of filaments from the



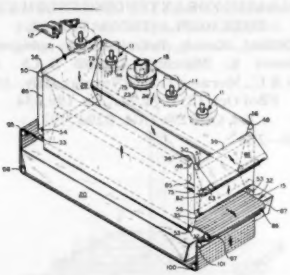
respective spinnerets in a direction transverse to the plane of the spinnerets to wind up spools which separately wind up each treated filament of a group of filaments discharged by the same spinneret.

3,801,243

APPARATUS FOR PRODUCING A MAT

Harvell Morton Smith, and Robert Edward Hengstler, both of Richmond, Ind., assignors to Johns-Manville Corporation, New York, N.Y.

Filed May 16, 1972, Ser. No. 253,841
Int. Cl. B29c *13/00*; **B29d** *7/00*
U.S. Cl. 425—80 **23 Claims**



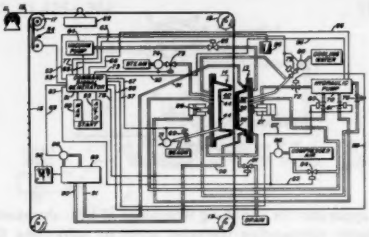
A fiber collection system for forming mats of mineral fibers by an air felting technique includes a collection chamber between the source of fiber and binder and the collection surface on which the mat is formed. All of the walls of the collection chamber are movable from the source to the collection surface and are then advanced incrementally to cleaning stations exterior of the chamber. Belts are employed for the chamber wall surfaces and they are cleaned by a liquid flush and if necessary a scrubber. The walls are mounted so that they can be contoured to control fiber flight. Seals enhance the suction control of fiber flight and also function as wall cleaners to deposit debris in the edge region of the mat which is normally removed and scrapped.

3,801,244

APPARATUS FOR MAKING A FOAMED ARTICLE HAVING A PLASTIC SKIN BONDED THERETO

Harvey Eisenberg, 9 Demarest Rd., Livingston, N.J.

Filed Feb. 8, 1972, Ser. No. 224,517
Int. Cl. B29d *27/04*
U.S. Cl. 425—10 Z **6 Claims**



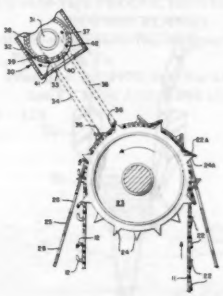
Apparatus and method for molding a non-planar article having a thermoplastic skin bonded to a foamed plastic body, said article being completely formed from conventional materials in a two-piece mold while the mold is closed.

3,801,245

APPARATUS FOR THE MANUFACTURE OF A SEPARABLE FASTENER

George H. Erb, Cuttingsville, Vt., assignor to American Velcro, Inc., Manchester, N.H.

Division of Ser. No. 87,438, Nov. 6, 1970, Pat. No. 3,715,415.
This application Aug. 28, 1972, Ser. No. 284,047
Int. Cl. B29c *23/00*
U.S. Cl. 425—174.4 **4 Claims**



A hook member is formed from non-woven sheet material for use in a separable fastening device of the type having two complementary members each provided with an engaging surface having thereon a very large number of hooking elements of the hook and loop type; the members are joined by pressing the engaging surfaces together with a large number of hooks and loops becoming inter-engaged whereupon they become resistant to separation by forces generally parallel to the interface plane of the surfaces and are readily separable by peeling forces applied substantially normal to the plane. The hooks in the hook member are formed from portions of the non-woven sheet displaced out of the plane thereof into a generally upright position by the steps of displacing the portions of the sheet material, and deflecting and heat treating these portions to form the hooks.

3,801,246

APPARATUS FOR SHRINKING A WRAPPING AROUND A TRANSPORT UNIT BY MEANS OF RADIANT ENERGY

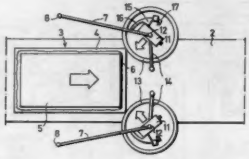
Olov Erland Gustavsson, Industrivagen 10, Kungalv, Sweden

Filed Aug. 28, 1972, Ser. No. 283,997

Claims priority, application Sweden, Sept. 9, 1971, 11430/71

Int. Cl. B29f *5/00*

U.S. Cl. 425—174.4 12 Claims



In an apparatus for shrinking wrappings of heat-shrinkable sheet plastic surrounding transport units by subjecting the wrapped units to directional radiant energy from emitters, the emitters are turnably and movably mounted and actuated to more or less accurately follow the contour of said unit at some distance therefrom so as to irradiate all portions of the unit wrapping more uniformly.

3,801,247

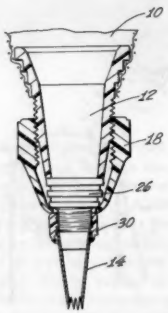
UNIVERSAL COUPLER FOR CAKE ICING DECORATING TUBES

Douglas R. Parrish, Anaheim, and Richard A. Parrish, Costa Mesa, both of Calif., assignors to Parrish's Cake Decorating Supplies, Inc., Los Angeles, Calif.

Filed Nov. 12, 1971, Ser. No. 198,340

Int. Cl. A23g *3/20*

U.S. Cl. 425—191 1 Claim



An improved universal coupler is provided, whereby a plurality of different cake decorating icing tubes may be selectively attached to an icing decorating cone, without the need to empty the cone when one tube is replaced by another. The coupler of the invention includes a tubular element and which has a threaded end which protrudes through a hole in the bottom of the cone when the coupler is placed in the cone. The larger sized icing decorating tubes may be selectively attached to the tubular element by means of an appropriate nut, as will be described. The coupler also includes a smaller tubular element which may be attached to the larger element in order that the smaller sized icing decorating tubes may be selectively coupled to the icing cone. A ring and/or a further nut is also provided which enables intermediate sized icing decorating tubes to be attached to the first-mentioned tubular element.

3,801,248

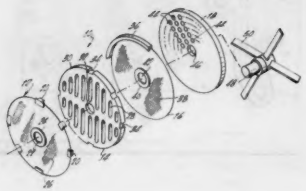
COMPRESSION ASSEMBLY FOR SOAP PLODDER

Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 308,955

Int. Cl. C11d *13/18*

U.S. Cl. 425—199 9 Claims



A compression assembly for a soap plodder having a housing, rotating means in the housing for levigating and homogenizing a mass of soap and including a shank having flights including an end flight disposed thereon. The compression assembly is located adjacent to the end flight and includes a first perforate means, a first compression plate having a plurality of elongated slots therein, a second perforate means continguous to the first compression plate means, and a second compression plate whose structure defines a plurality of apertures located adjacent the second perforate means and closely spaced thereto for preventing blockage of the second perforate means by accumulated soap under the rotating means.

3,801,249

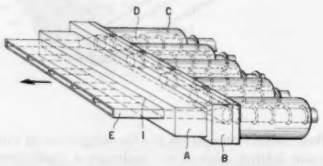
APPARATUS FOR EXTRUDING PROFILES OF THERMOPLASTIC MATERIAL

Giuseppe Milani, Lonate Pozzolo, Italy, assignor to Apparecchiature E. Macchine Utensili S.A.S. di Milani Guiseppe & C., Morano, Ticino (Novara), Italy

Filed Oct. 18, 1971, Ser. No. 190,034

Int. Cl. B29b *1/04*; B29d *7/02*

U.S. Cl. 425—204 9 Claims



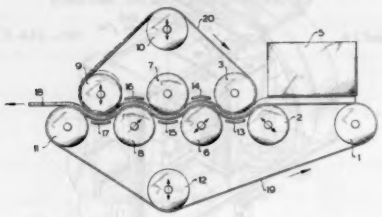
A method and a machine are disclosed for the extrusion of a plastic material, in which the width of the extruded product predominates over its other dimensions, such as is the case with sheets, slabs and the like. A plurality of extrusion screws of conventional make are placed parallel and close together towards a single and common spinneret. Adjustment means for the temperature and the speed of the screws are provided in order to obtain a selective control.

3,801,250

APPARATUS FOR EXERTING CONTINUOUS PRESSURE

Walter Kaiser, and Rolf Gersbeck, both of Hannover, Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Apr. 11, 1972, Ser. No. 242,935
Claims priority, application Germany, Apr. 23, 1971, 2120016
Int. Cl. B29d 7/14; B30b 5/04
U.S. Cl. 425—224 9 Claims



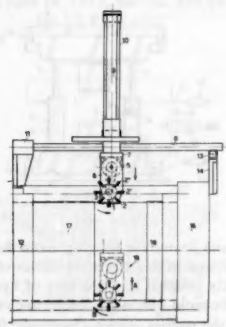
An improved apparatus for the continuous compression of a material to form chipped wood, molded fiber board and similar plates or to vulcanize rubber conveyor belts or the like, which apparatus is of the type wherein the material is compressed between two spaced steel belts which are mounted on a plurality of rollers, at least some of which are pressure rollers, for movement therewith. The plurality of rollers are arranged in a row with adjacent ones thereof being laterally offset in height with respect to one or the other. The two belts alternately loop the individual rollers of the row with the lateral offset in height being such that the belts alternately loop the rollers by less than 180°.

3,801,251

COMBINATION OF A PRESS FOR MOULDING PLASTIC MATERIALS, RUBBER AND THE LIKE AND A CLEANING DEVICE INCORPORATED INTEGRALLY IN THE PRESS

Giovanni A. Coscia, Malnate, Italy, assignor to Societe Genetale Conseil SO.GE. Co., Zurich, Switzerland

Filed July 14, 1971, Ser. No. 162,416
Claims priority, application Italy, July 24, 1970, 27839/70
Int. Cl. B29c 3/00
U.S. Cl. 425—229 6 Claims



An improved press for moulding plastic materials, rubber and the like comprising a device for removing residual material adhering to the mould surface. Said device comprises a rotating brush provided with displacement means allowing the brush to be horizontally and vertically moved in synchronism with the movement of the moulding press.

3,801,252

APPARATUS FOR MANUFACTURING FILAMENTARY AND FIBROUS TEXTILE PRODUCTS FROM THERMOPLASTIC FILM

George Waterhouse, Macclesfield, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Jan. 19, 1972, Ser. No. 219,011
Claims priority, application Great Britain, Jan. 26, 1971, 3155/71
Int. Cl. B29d 7/24
U.S. Cl. 425—304 11 Claims

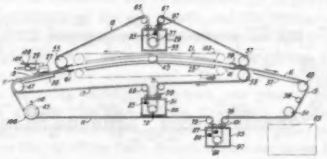
Textile filamentary and fibrous products are made from thermoplastic film by forging the film between a hot roller with circumferential ribs and grooves and a hot film support roller, so that latent filament characteristics are imparted to the film, the process including the feature that the film is stretched longitudinally immediately before the forging step. Further process features include further stretching of the forged film in one or more zones, in one of which the film is split into filaments, while being stretched, by a transversely disposed pin which has the same pattern of ribs and grooves as has the film, and also has a lengthwise groove which the film bridges as it runs over the splitter pin.

3,801,253

APPARATUS FOR THE PRODUCTION OF PEARLESCENT BUTTON BLANKS

Charles H. Williams, Export, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 28, 1972, Ser. No. 248,702
Int. Cl. B29c 3/02; B29d 19/02
U.S. Cl. 425—324 8 Claims



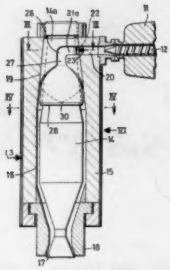
Pearlescent button blanks are produced by casting and polymerizing a liquid polymerizable resin containing light-reflecting platelets in cavities having the desired form of the button blanks. Pearlescence is imparted to the button blanks by orienting the light-reflecting platelets parallel to the surfaces of the blanks by scuffing a surface of the resin in the cavities during polymerization of the resin. Apparatus for producing buttons by the method of the invention includes a continuous perforated belt and two continuous solid belts that sandwich the perforated belt. The scuffing action for orienting the light-reflecting platelets is produced by sliding the solid belts across the surfaces of the perforated belt.

3,801,254

APPARATUS FOR MAKING TUBULAR PARISONS OF THERMOPLASTIC MATERIAL

Albert Godtner, Hennef, Germany, assignor to Kautex-Werk Reinold Hagen, Bonn-Holzlar, Germany

Filed Jan. 4, 1972, Ser. No. 215,311
Int. Cl. B29f 3/02
U.S. Cl. 425—380 12 Claims



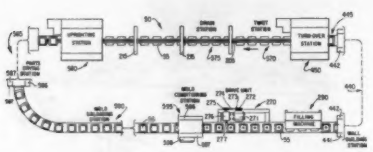
In an extrusion head for forming tubular thermoplastic parisons, the base material emerging from an extruder is divided into two individual material flows, each of which is caused to spread circumferentially about a core in the course of its advance axially with respect to the core to form two tubular coaxial flows, each having a longitudinally extending seam zone. The two coaxial tubes are united in the extrusion head to form a parison in which any seam zone extends only half way through the wall thickness.

3,801,255

AUTOMATIC CASTING MACHINE

Robert W. Meyer, South Elgin, and Robert G. Swanson, Dundee, both of Ill., assignors to M and S Engineering, Inc., Dundee, Ill.

Filed Dec. 22, 1970, Ser. No. 100,718
Claims priority, application Germany, Jan. 4, 1971, 2100192
Int. Cl. B29c 5/04
U.S. Cl. 425—147 21 Claims



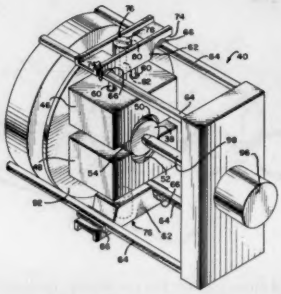
An automatic casting machine having means for automatically and simultaneously introducing a casting material into a plurality of molds, filling means for automatically filling the molds to a predetermined level, mold carrying means adjustable to carry molds of different sizes, means for inverting the mold carrying means and the molds carried thereby to drain excess casting material therefrom, means for uprighting the mold carrying means and conveyor mechanism for transporting the mold carrying means from the filling means through a wall building station to the inverting means and thereafter through a draining station to the uprighting means and thereafter through a parts drying station to a mold unloading station and then to a mold conditioning station.

3,801,256

BREECH MECHANISM INCLUDING SELF-ALIGNING BREECH BLOCKS

Robert E. Farrell, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Apr. 21, 1972, Ser. No. 246,418
Int. Cl. B29f 1/00; G05g 5/06
U.S. Cl. 425—450 14 Claims



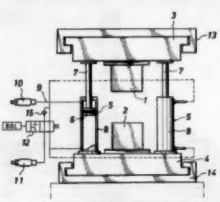
A molding machine of the type comprising tie rods mounted to one platen which are received by breech mechanisms associated with a second platen. Each breech mechanism comprises a plurality of cooperative breech blocks driven towards-and-away from one another by individual cylinder-and-piston actuators which exert equal, oppositely directed moving forces on the breech blocks. The breech blocks are mounted for lateral and longitudinal movement relative to their respective tie rods, thereby enabling the breech blocks to be self-aligning with the tie rods and accommodating tie rod stretch.

3,801,257

DEVICE FOR KEEPING METAL MOLD HALVES IN A CLAMPED STATE

Katashi Aoki, 6037 Oaza Minamijo, Sakaki-machi, Hanishina-gun, Japan

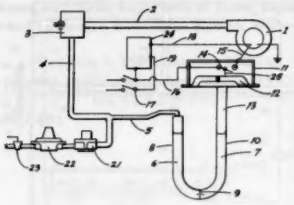
Division of Ser. No. 145,385, May 20, 1971, Pat. No. 3,700,765. This application Aug. 11, 1972, Ser. No. 279,907
Int. Cl. B29c 3/00
U.S. Cl. 425—450 1 Claim



A method and device for keeping metal mold in a clamped state characterized in that the mold-halves of the metal mold are respectively coupled to a plurality of hydraulic cylinders and pistons, the mold-halves are forced to close so that the displacement of the pistons causes a hydraulic fluid to flow from one space to the other in the hydraulic cylinders and also to an accumulator through a control valve, and upon the completion of the closure, shifting the control valve to another position so that the remaining fluid in the above mentioned one space is further evacuated to another accumulator at a low pressure with the simultaneous communication between the other space of the hydraulic cylinders and the first accumula-

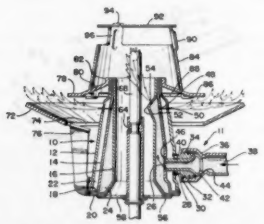
tor, whereby a pressure difference is created between the two spaces separated by the pistons, and the mold-halves are thereby clamped.

3,801,258
POST PURGE SYSTEM FOR GAS BURNERS
Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Dec. 20, 1972, Ser. No. 316,763
Int. Cl. F23n 1/02
U.S. Cl. 431—90 **4 Claims**



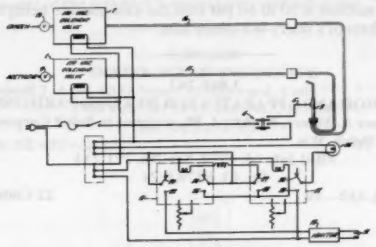
A post purge device for a fuel burning apparatus wherein a fuel pressure sensing means is disposed between and in communication with a main fuel line supplying fuel to a fuel burning apparatus and a diaphragm, the fuel pressure sensing means containing a fluid therein wherein movement of the fluid is determined by the pressure in the fuel line thereby causing movement of the diaphragm in response to the movement of the fluid, the diaphragm being in electrical communication with a combustion air blower wherein a predetermined amount of movement of the diaphragm controls the energization of the combustion air blower.

3,801,259
CONVERTIBLE BURNER
Fred W. Hendrick, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed June 18, 1973, Ser. No. 370,991
Int. Cl. F23g 9/00
U.S. Cl. 431—285 **20 Claims**



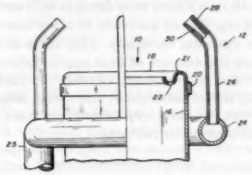
A burner has a first chamber with ports for a first gas and a second chamber with ports for a second gas. Facilities selectively connect the chambers to a gas supply conduit.

3,801,260
IGNITER
Michael G. Irwin, 1919 Vuelta Grande Ave., Long Beach, Calif.
Filed Feb. 22, 1973, Ser. No. 334,771
Int. Cl. F23q 3/00
U.S. Cl. 431—128 **3 Claims**



The specification discloses an electrical igniter for gas operated devices and more particularly an arrangement for automatically lighting a welding torch.

3,801,261
OPTI-NETIC FLARE
Robert D. Reed, and Robert E. Schwartz, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed Apr. 27, 1972, Ser. No. 248,066
Int. Cl. F23d 13/20
U.S. Cl. 431—202 **8 Claims**



This invention describes an improved apparatus for the smokeless flare burning hydrocarbon gases. The improvement results from the improved use of steam energy to provide increased turbulence of the air, steam and the hydrocarbons that are to be burned and to provide an intense high temperature burning zone to ensure that any free carbon that is formed is completely consumed. The steam is supplied through a plurality of nozzles which are placed circumferentially around the top of the flare and are directed generally inwardly toward the vertical stream of gases that are issuing from the tip of the flare. Relationships are given for the vertical angle of the steam nozzles in relation to their position above the tip of the flare.

3,801,262
PROCESS FOR THE PRODUCTION OF LIGHTWEIGHT EXPANDED AGGREGATE
Abdon Karkowski; Edmund Nowak, and Roman Szromba, all of Krakow, Poland, assignors to Instytut Przemyslu Wiazacych Materialow, Budowlanych Opole, Poland
Filed July 8, 1971, Ser. No. 160,953
Claims priority, application Poland, July 23, 1970, 142205
Int. Cl. C04b 31/10
U.S. Cl. 432—13 **2 Claims**

A method of the manufacture of an aerated lightweight expanded aggregate from a fly-ash,consisting in that the fly-ash

is granulated with a slurry made of silt,or clay or any other mineral substances containing at least 30 per cent of grains of the dimensions below 5 microns,and at least 33 per cent of water,the so obtained granules being subsequently calcinated in a rotary kiln provided with a system for continuous control of temperature within the range of 900° to 1,400° C.

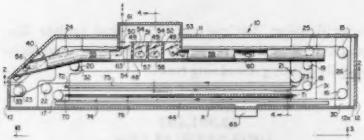
A method may also consist in that the fly-ash is mixed with water to such a proportion that the water content of the so obtained mixture is 30 to 60 per cent,the said mixture being fed in the form of a slurry to a rotary kiln.

3,801,263

METHOD AND APPARATUS FOR HEATING PARISONS

Lawrence A. Moore, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed July 14, 1972, Ser. No. 271,714
Int. Cl. F27b *9/24*
U.S. Cl. 432—19 **22 Claims**



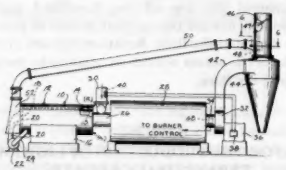
An oven for heating parisons prior to a blow molding operation. As the parisons are carried through the oven in an upright position, they are heated by air blown across the oven from a plurality of inlet plenum chambers on one side thereof to a return duct on the other side of the oven. The amount of air through each plenum chamber is separately controlled. Deflectors with or without strip heaters between them may be provided to keep the air currents in a horizontal plane or to direct the air currents vertically. This vertical deflection can be used to vary the amount of heat applied along the length of each parison thus intentionally causing the parison to stretch non-uniformly in the subsequent stretching step so that in the subsequent blow molding step certain portions of the parison will be thicker than other portions.

3,801,264

DEHYDRATING SYSTEM WITH EXHAUST GAS RECYCLING

Gordon J. Lindl, Milwaukee, Wis., assignor to The Heil Company, Milwaukee, Wis.

Filed Apr. 24, 1972, Ser. No. 246,530
Int. Cl. F27b *7/00*; **F26b** *11/04*
U.S. Cl. 432—37 **5 Claims**



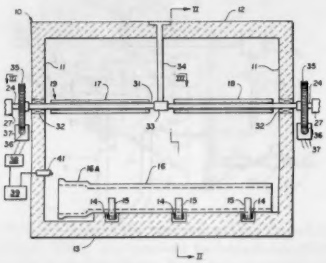
A furnace having a burner at one end and having air openings adjacent to the burner is coupled at its other ends to a rotary drum dryer for alfalfa or other moist products which are to be dried. A fan is coupled to the outlet end of the dryer to draw the moist product and the hot gases from the furnace through the dryer. A centrifugal cyclonic collector is coupled to the outlet of the fan, and a significant portion of the exhaust gases from the collector is recycled to a hood which covers the burner and air openings at an end of the furnace. The recycled exhaust gases provide substantially all of the drying medium for the dryer.

3,801,265

FURNACE AND COOLING CONTROL THEREFOR

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., Pittsburgh, Pa.

Filed Dec. 6, 1972, Ser. No. 312,481
Int. Cl. F23m *5/08*
U.S. Cl. 432—42 **8 Claims**



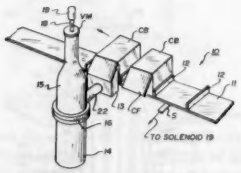
A furnace cooling control apparatus provided by a plurality of water-cooled panels supported within a furnace above a conveyor used to transport heated workpieces along the furnace hearth. The panels are arranged in an edge-to-edge relationship along the length of the furnace with pairs of panels arranged end-to-end across the width of the furnace. A drive connected to a centrally-located shaft on each panel independently, or if required a group of panels, rotates the panels to expose a portion or the entire area of either an insulated face on one side of the panel for slow cooling or a water-cooled face on the other side of the panel for fast cooling. A temperature control system is connected to the drive for adjusting each panel or a group of panels position to maintain a desired cooling rate of the workpieces.

3,801,266

HOT AIR DIVERSION DEVICE

Timothy K. Austin, Santa Ana, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 15, 1973, Ser. No. 341,502
Int. Cl. F27b *9/10*
U.S. Cl. 432—45 **2 Claims**



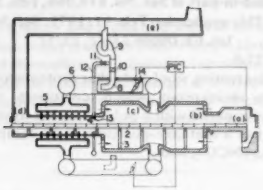
A machine for conveying container bodies formed from paperboard having surface material thereon capable of being bonded together by the application of heat includes a nozzle for directing heated air against the surfaces, a conduit being connected between a source of heated air and the nozzle means. Structure is provided in the conduit for diverting heated air away from the nozzle when the conveyor is stopped,

and comprises a first passage for heated air and valve structure at the end of the passage and normally closing the passage to the ambient. A second passage is concentric with the first passage and is connected to the nozzle, the second passage having an opening spaced from the valve structure for reversing the path of movement of the heated air to cause the air to be moved to the nozzle. A sensor responsive to the stopping of the conveyor is provided for opening the valve thereby diverting the heated air from the nozzle and into the ambient, and thereby preventing overheating of the selected surfaces of the container bodies.

3,801,267
FURNACE HAVING A COMBUSTION PRESSURE ELEVATING DEVICE

Ryuzo Okuno, and Hiroo Fujii, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Filed Feb. 6, 1973, Ser. No. 330,150
Claims priority, application Japan, Mar. 3, 1972, 47-22502
Int. Cl. F27b 9/02
U.S. Cl. 432—171 **3 Claims**

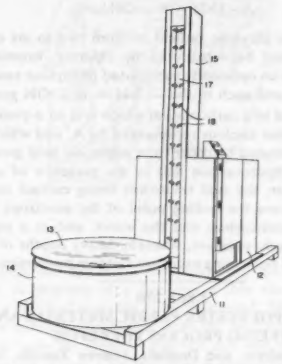


The present invention relates to a furnace for industrial use having a device for elevating the pressure of a combustion gas to be fed therein, which, in a part of its combustion zone is provided with a number of projecting jet nozzles being adapted to provide to the upper and lower portions of the said combustion zone high speed jet zones, each at a determined distance from substances to be treated, such as, steel ingot or blooms, wherein a high temperature combustion gas which has been fed from another combustion zone is jetted out from the said nozzles under high speed into the said high speed jet zone whereby a heat transfer is efficiently conducted therein between the said gas streams and the said substances by utilizing the high coefficient of heat transfer occurring on the surface of said substances due to the said high-speed gas streams, characterized in that a device for elevating the pressure of the said combustion gas is provided in the interior of a supply duct into which the said high temperature combustion gas is fed, being extracted from the said other combustion zone, whereby a small amount of high pressure air or low temperature exhaust gas in a flue, which has been exhausted from an industrial furnace, is jetted out into the supply duct by said device with an ejector nozzle under high speed thereby to elevate the pressure of the said high temperature combustion gas.

3,801,268
SHRINK-WRAPPING DEVICE

Donnell J. Amo, 2003 Nina Ct., Hayward, Calif.

Filed Feb. 16, 1973, Ser. No. 333,180
Int. Cl. F27b 9/16
U.S. Cl. 432—225 **11 Claims**



A shrink-wrapping device for pallet loads includes a turntable for rotating the pallet load, and an adjacent, stationary vertical column. Gas burners spaced along the vertical column are interspersed with cold air jets which mix cold air with hot combustion gases and project the mixture onto a plastic film covering the pallet. The pallet rotates past the column, and the hot air mixture shrinks the film on the top and sides of the pallet. A cam-controlled switch alters the speed of the blower which provides cold air to the jets to ensure uniform heating of the film on the sides and corners of the pallet.

CHEMICAL

3,801,269
EXHAUST DYING SYNTHETIC TEXTILE MATERIAL FROM AN AQUEOUS HALOGENATED HYDROCARBON BATH

Ian Cheetham, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 15, 1971, Ser. No. 198,959

Claims priority, application Great Britain, Dec. 8, 1970, 58275/70

Int. Cl. D06p *1/20, 3/54*

U.S. Cl. 8—39 **7 Claims**

Process for dyeing synthetic textile materials which comprises treating said textile materials with a solution or dispersion of an anthraquinone dyestuff free from sulphonic acid groups of the formula

$$A—(NH—B—OH)_n$$

wherein B is an alkylene radical of from two to six carbon atoms which may be substituted by chlorine, bromine, or hydroxy, or B is an optionally substituted phenylene radical; n is 1, 2, 3 or 4; and each of the — NH — B — OH groups is directly attached to a carbon atom which is in an α-position of the anthraquinone nucleus represented by A, and which may be further substituted by other than sulphonic acid groups, in a halogenated hydrocarbon and in the presence of a small amount of water, the said treatment being carried out at a temperature above the boiling point of the azeotrope of the halogenated hydrocarbon and the water, and at a pressure above atmospheric pressure, whereby heavy depths of shade can be obtained possessing excellent fastness properties.

3,801,270
YELLOW POLYESTER FABRIC MATERIAL AND DYEING PROCESS THEREFOR

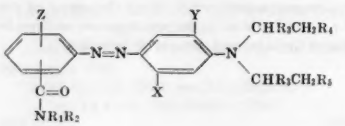
Edgar Earl Renfrew, and Dominic Andrew Zanella, both of Lock Haven, Pa., assignors to American Aniline Products, Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 80,171, Oct. 12, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,892

Int. Cl. D06p *1/18*

U.S. Cl. 8—41 C **6 Claims**

Synthetic fabric materials, particularly polyester fabric materials, are dyed a yellow shade through the use of monoazo dyes of the formula:



(I)

wherein:

X is hydrogen, chloro or lower alkyl;

Y is hydrogen or lower alkoxy;

Z is hydrogen, chloro or lower alkoxy;

R_1 is hydrogen, lower alkyl or phenyl;

R_2 is hydrogen or lower alyl;

R_3 is hydrogen or methyl;

R_4 is cyano, lower carbacyloxy, chloro(lower carbacyloxy) or benzoyloxy; and

R_5 is cyano, lower carbacyloxy, chloro(lower carbacyloxy) or benzoyloxy, or when R_4 is benzoyloxy, R_5 may be hydrogen.

The above compounds are made by diazotizing an aminobenzamide and coupling the resultant diazonium salt with a tertiary amino base having cyano-lower alkyl or esterfied hydroxy-lower alkyl groups attached to the tertiary amino nitrogen. The dyeings particularly on polyethylene terephthalate fibers, are of a bright yellow shade and are substantive, light fast, and sublimation resistant.

3,801,271
TREATMENT OF KERATIN FIBERS

Leszek J. Wolfram, Rockville, Md., assignor to I.W.S. Nominee Company Limited, London, England

Filed July 12, 1971, Ser. No. 161,978

Int. Cl. D06m *13/00*

U.S. Cl. 8—115.6 **7 Claims**

The set stability of keratin fibers, particularly wool fibers, is improved by polymerizing a halogen-containing vinyl or acrylic compound in the fibers and thereafter reacting the deposited polymer with a thiosulfate. Polymerization of the vinyl or acrylic compound can be readily effected in the presence of persulfuric acid and a tetrakis-(hydroxymethyl)-phosphonium salt.

3,801,272
WOOL TREATING PROCESS

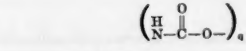
George M. Wagner, Lewiston, and William J. Vullo, Burnt Hills, both of N.Y., assignors to Hooker Chemical Corporation, Niagra Falls, N.Y.

Continuation-in-part of Ser. No. 619,066, Feb. 27, 1967, abandoned. This application Feb. 11, 1971, Ser. No. 114,716

Int. Cl. D06m *13/42, 15/52*

U.S. Cl. 8—127.6 **10 Claims**

A process for teating wool and other proteinaceous material to render it shrinkproof which comprises treating the proteinaceous material with a polymerizable treating solution which comprises a urethane-polyisocyanate composition containing $(OH)_n$, $(NCO)_p$ and



groups, wherein n is a number from 0 to 4.5, p is a number from 1.5 to 6 and $n+p$ is 3 to 6, and q is from 1 to 20, wherein the said composition contains tertiary nitrogen, to the extent of at least 0.05 percent by weight and, thereafter, curing the thus-treated proteinaceous material with water.

3,801,273
METHODS OF RECOVERING WASTE CELLULOSIC FIBERS

Alfred Thomas Mays, Piscataway, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 30, 1972, Ser. No. 285,388

Int. Cl. D06m *1/02, 1/22*

U.S. Cl. 8—141 **14 Claims**

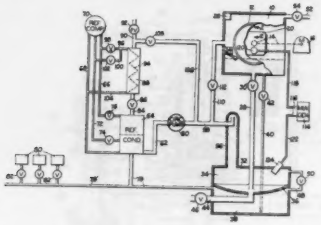
Methods of recovering waste cellulosic fibers from mixtures of waste cellulosic fibers, waste polyester and/or acrylic fibers, and synthetic, cross-linked resin materials which comprise: heating a mixture of waste cellulosic fibers, waste polyester and/or acrylic fibers, and synthetic, cross-linked resin materials within the range of from about 212° to about 275°F. for a period of from about ¾ hour to about 5 hours in an aqueous treating solution containing an alkali metal hydroxide and one or more added normally liquid chemical agents such as ketones, alcohols, lactones, and sulfoxides, which initiate the decomposition or solubilization of the waste polyester and/or acrylic fibers and the synthetic, cross-linked resin materials; adding a neutral or alkaline oxidizing agent to the mixture of waste fibers and synthetic, cross-linked resin materials; heating the mixture of waste fibers and synthetic, cross-linked resin materials in the presence of the neutral or alkaline oxidizing agent to complete the decomposition or solubilization of the waste polyester and/or acrylic fibers and the synthetic, cross-linked resin materials; and recovering the waste cellulosic fibers.

3,801,274

METHOD FOR CLEANING FABRICS AND CLOTHES

John O'Farrell Gleason, 1907 Third Ave., Milwaukie, Oreg.

Filed Dec. 13, 1971, Ser. No. 207,181
Int. Cl. D06l *1/00*
U.S. Cl. 8—142 5 Claims



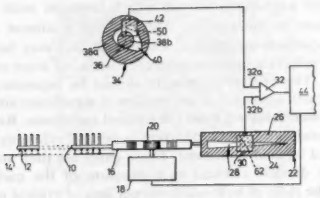
A mixture of water and a cleaning solvent having a boiling point lower than water is used to clean fabrics, clothes and like materials, and thereafter the solvent is recovered by subjecting the mixture to microwave energy at a frequency which causes heating only of the water molecules which, in turn, effect heating and selective vaporization of the solvent.

3,801,275

PRINTING WEB MATERIALS

Donald Rider Stankard, Coppice, and Thomas William Wilson, Bramhall, both of England, assignors to English Calico Limited, Manchester, England

Filed Oct. 25, 1972, Ser. No. 300,838
Claims priority, application Great Britain, Nov. 5, 1971, 51,440/71
Int. Cl. B05b *13/04*
U.S. Cl. 8—149 14 Claims



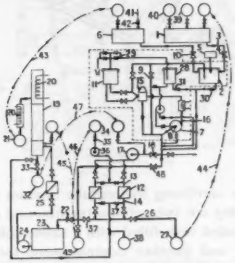
The present invention relates to machines for producing pattern effects on web materials of the type which includes one or more rows of dye dispensing nozzles mounted on a reciprocable carriage and arranged to apply a stream of colour to a material web as the web passes beneath the nozzles. Machines of this general type are known as "polychromatic dyeing machines". In a polychromatic dyeing machine constructed in accordance with the present invention, the nozzle bearing carriage is arranged to be displayed by an electrically controlled means in dependence upon the amplitude of a predetermined master waveform.

3,801,276

PROCESS FOR PRODUCING DYED AND CLEANED MATERIAL

Robert Borland Gray, Kilbarchan, Scotland, assignor to J. & P. Coats Limited, Glasgow, Scotland

Filed Mar. 30, 1972, Ser. No. 239,421
Claims priority, application Great Britain, Apr. 3, 1971, 8622/71
Int. Cl. D06p *1/68*; B05c *11/10*; D06f *43/08*
U.S. Cl. 8—158 3 Claims



A process and apparatus for producing dyed and cleaned material. A mixture of a dye and a dye carrier is passed through a batch of material to be processed. The dye remaining in the mixture is separated from the dye carrier after it has passed through the material and the dye and the dye carrier are separately stored. Cleaning fluid is passed first through the batch of material which it cleans of loose dye and then through the store of dye so that the cleaning fluid already containing removed loose dye absorbs the stored dye. The cleaning fluid is separated from the dye and stored and the process is repeated using the stored dye carrier mixed with fresh dye and the stored cleaning fluid.

3,801,277

NON-CATALYTIC DURABLE PRESS PROCESS FOR TREATING CELLULOSIC MATERIAL USING FORMALDEHYDE VAPOR AND POST-HEATING

Jose P. Gamarra, San Jose, and Ronald Swidler, Palo Alto, both of Calif., assignors to Cotton, Incorporated, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,237
Int. Cl. D06m *13/14*, *13/40*, *13/54*
U.S. Cl. 8—182 9 Claims

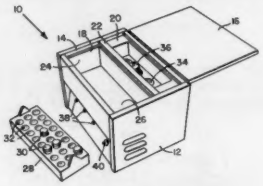
The dimensional stability, wrinkle resistance, smooth drying characteristics and total shape retentivity of cellulosic material such as cotton fabrics are improved by impregnating the fabric with an aqueous solution of a monomeric compound which has at least one active hydrogen and reacts with formaldehyde, e.g., urea, exposing the impregnated fabric to an atmosphere containing formaldehyde vapors in the absence of a catalyst until a creaseproofing amount of an at least partially polymerized, substantially water-insoluble condensate (such as an amide-formaldehyde condensate) is affixed to the fabric without, however, effecting any substantial amount of cross-linking with the cellulosic fiber. The thus-exposed fabric is thereafter post-heated in an inert gaseous atmosphere also in the absence of a catalyst to further polymerize and cross-link the fabric.

3,801,278

STERILIZING APPARATUS FOR HYDROPHILIC CONTACT LENSES

Hubert Wagner, and Darrlle D. Moore, both of Dubuque, Iowa, assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,020
Int. Cl. A61l *3/00, 7/00;* **F27d** *11/00*
U.S. Cl. 21—86 **10 Claims**



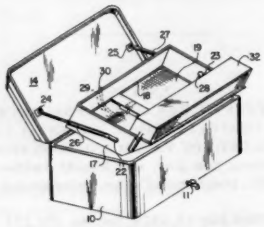
Apparatus for sterilizing hydrophilic contact lenses. In the apparatus housing are two compartments, one compartment for sterilizing sealed vials filled with a saline solution and the contact lenses, and another compartment for maintaining squeeze bottles of the saline solution at an asepticizing temperature. Each compartment has its own heating element and thermostat control with the overall cycle of operation of both compartments being controlled by a single timer.

3,801,279

COLD STERILIZATION UNIT

Michael F. Grieco, P.O. Box 131, Medfield, Mass.

Filed May 30, 1973, Ser. No. 365,322
Int. Cl. A61l *3/00, 7/00;* **A47b** *81/00*
U.S. Cl. 21—87 **5 Claims**



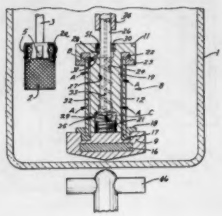
A cold sterilization unit comprises an open-topped tank having a closure lid hingedly attached thereto. An insert tray is disposed within the tank, and linkage means interconnect the tray to the lid to effect movement of the tray with movement of the lid. The linkage means includes means operative to lift the tray upwardly in substantially horizontal position, out of a sterilization liquid within the tank, during initial opening of the lid, and then operates to effect a tilting of the tray to an angular position during further opening of the lid beyond the predetermined opening position to effect a gravity dumping of implements in the tray into a collection receptacle which removably engages the tray.

3,801,280

SOLUBILITY-DISSOLUTION TEST APPARATUS AND METHOD

Ashok C. Shah, Portage, and Craig B. Peot, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 11, 1971, Ser. No. 197,761
Int. Cl. B01d *33/00;* **B01n** *33/00, 33/16*
U.S. Cl. 23—230 R **20 Claims**



Apparatus and method for measuring the dissolution rate of a solid material. A container is provided for a solvent and a preforated chamber for the solid material is positioned within said container. A rotatable hollow filter is also located within said container and means are provided for effecting rotation thereof. Said rotation performs the double function of keeping the filter screen clear of solid particles and agitating the solvent. Pumping means draw the material-containing solution from within said hollow filter and convey it to suitable means for measuring the concentration of solute in the solvent, such as spectrographic measuring means. The material-containing solution may then be returned to said container.

3,801,281

CRITICAL CARBONATE MINERALS IN GEOCHEMICAL PROSPECTING

Robert R. Thompson; Robert W. Duschatko, both of Tulsa, and Arthur J. Nash, Cushing, all of Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Dec. 10, 1971, Ser. No. 206,813
Int. Cl. G01n *33/24*
U.S. Cl. 23—230 EP **6 Claims**

In a geochemical prospecting method, samples are analyzed for a critical carbonate mineral which contains most of the hydrocarbons in the sample. The mineral is almost always dolomite, calcium-magnesium carbonate, but may be other carbonate minerals, such as iron carbonate, or even calcium carbonate. The critical carbonate should be separated from any other carbonates which are present in significant amounts. Gases are then released from the critical carbonate. Released gases are analyzed for hydrocarbon content. Preferably, gases are released by acid treatment. These gases are then analyzed for carbon dioxide content as a measure of the carbonate mineral. The ratio of hydrocarbons per unit of critical mineral is then plotted to form a geochemical prospecting map.

3,801,282

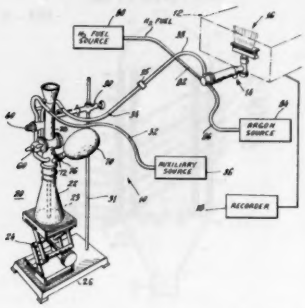
METHOD AND APPARATUS FOR GENERATING GASES FOR ATOMIC ABSORPTION SPECTROPHOTOMETERS

David C. Manning, Trumbull, and Frank J. Fernandez, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 22, 1972, Ser. No. 228,171
Int. Cl. G01j *3/30;* **G01n** *1/00, 21/58*
U.S. Cl. 23—230 R **5 Claims**

A gas generation accessory for an atomic absorption spectrophotometer includes a reaction vessel for holding a sample and an acid. The sample includes an element from a group in-

cluding arsenic and selenium. A dosing column is coupled to the reaction vessel and a gas-tight stopcock is mounted in the dosing column and includes a cavity for holding a metal such as zinc. The stopcock is rotatable for projecting the metal into the acid to cause a reaction to release hydrogen gas. The hydrogen gas in turn reacts with the element in the sample to produce a gaseous hydride. The gaseous hydride is collected



in an elastic reservoir and stored under pressure until the completion of the reaction. Thereupon the gaseous hydride in the elastic reservoir is carried into the atomic absorption spectrophotometer and the element appears in a substantial concentration for a relatively short time. This permits the resonance lines of the element to be recorded and the element detected.

3,801,283

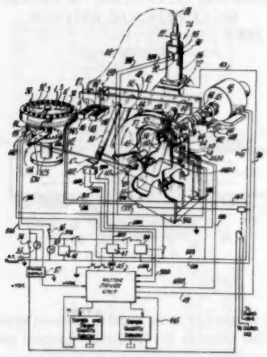
AUTOMATIC PIPETTOR

Stephen I. Shapiro, Scarsdale, and Thomas Picunko, Bronxville, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,492

Int. Cl. G01n *33/16, 1/14*

U.S. Cl. 23—253 R **3 Claims**



Apparatus for automatically and rapidly transferring precise, accurate multiple quantities of samples, such as blood serum, and reagent to the rotatable transfer device of a rotating spectrophotometer analyzer.

ERRATUM

For Class 23—259 see:
Patent No. 3,800,984

3,801,284

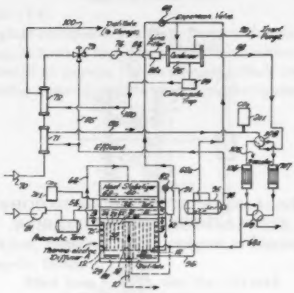
PELTIER EFFECT DIFFUSION APPARATUS

Milton Meckler, 16348 Tupper St., Sepulveda, Calif.

Division of Ser. No. 744,485, July 12, 1968, Pat. No. 3,671,404. This application Dec. 21, 1970, Ser. No. 99,957

Int. Cl. B01d *3/00;* **B01j** *9/00*

U.S. Cl. 23—263 **6 Claims**



A thermoelectric diffusion still including a concentric series of sections which sections are closely spaced to define annular diffusion spaces therebetween. A series of thermoelectric elements are positioned within such sections providing heated and cooled surfaces, respectively, on opposite sides of the section as well as facing each other across the spaces to evaporate and condense a feed fluid. Means are provided for collecting condensate from the opposite surface of each of the sections.

3,801,285

APPARATUS FOR RECEIVING CRYSTALS

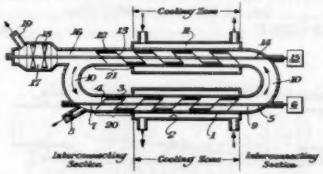
Ewald Meisenburg, Gartenstrasse 5, and Rolf Langenberg, Liebigstrasse 18, both of Wesseling, Germany

Continuation-in-part of Ser. No. 853,737, Aug. 28, 1969, abandoned. This application Mar. 22, 1972, Ser. No. 236,829

Claims priority, application Germany, Sept. 4, 1968, 1794084

Int. Cl. B01d *9/04*

U.S. Cl. 23—273 F **6 Claims**



Apparatus for recovering crystals from a melt or solution which is introduced into a crystal paste prepared from the melt or solution having a closed-loop system of pipes containing one or more cooling zones wherein the pipes closing the system or connecting the cooling zones have about the same diameter than the pipes of the cooling zones and are relatively short. The conveying means for the paste is mounted on a common shaft with scrapers which remove the crystals from the pipe wall.

3,801,286

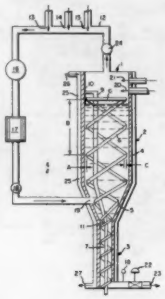
SLURRY POLYMERIZATION REACTOR

Colin Anolick, Louisville, Ky., and Robert Allen Covington, Jr., Wilmington, Del., assignors to E. I. du Ponte de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 873,353, Nov. 3, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,239

Int. Cl. C08f *1/98*

U.S. Cl. 23—285 7 Claims



A chemical reactor for slurry polymerization comprising:

a. a generally cylindrical vessel having a circular cross-section;

b. a generally cylindrical, rotatable, open-cage, spiral-flighted, ribbon element coaxially mounted inside of the vessel, having a diameter slightly smaller than the inside diameter of the corresponding part of the vessel wherein it rotates; and

c. a rod element positioned adjacent to the inside surface of the ribbon and mounted in said reactor vessel independently of said ribbon element so that, during rotation of said ribbon element, relative motion occurs between the rod and ribbon elements, the rod and ribbon elements cooperating and arranged such that said relative motion produces a scraping action to remove agglomerated material adhering to the inside surface of the ribbon.

3,801,287

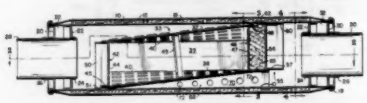
CATALYTIC CONVERTER

George E. Scheitlin, and Richard F. Little, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 141,625, May 10, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,097

Int. Cl. F01n *3/14*; B01j *9/04*

U.S. Cl. 23—288 F 4 Claims



A catalytic converter for removing noxious polfutants from an exhaust gas stream having a conversion chamber mounted therein between its inlet and outlet. The conversion chamber extends diagonally across the converter and is provided with a pair of opposed faces having openings therein for gas passage therethrough. One end of said chamber is fixedly connected to said converter and the opposite end of said chamber is slidably connected thereto whereby said chamber is free to expand and contract in response to temperature changes.

3,801,288

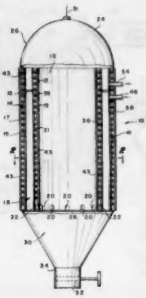
GASIFICATION REACTOR

Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, both of Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed July 13, 1971, Ser. No. 162,180

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 R 6 Claims



A reactor for use in gasifying carbonaceous materials comprising inner and outer shells defining concentric chambers, one to be filled with a metal oxide for producing and heating gases to be used in the gasification process, and the other to be filled with the carbonaceous material to be gasified. The inner shell includes passageway means in the lower portion thereof communicating two chambers. The inner and outer shells are comprised of spaced walls having heat exchange fluid conduits disposed therein whereby the temperature within the chambers can be controlled within certain limits.

3,801,289

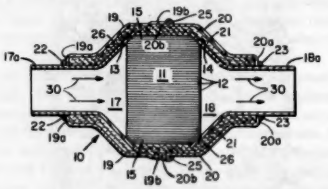
CATALYTIC CONVERTER

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 19, 1972, Ser. No. 255,020

Int. Cl. F01n *3/14*; B01j *9/04*

U.S. Cl. 23—288 F 6 Claims



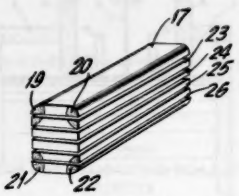
A catalytic converter to be used in exhaust systems of internal combustion engines for emission control purposes. The converter comprises an assembly including pairs of circular and generally frusto-conical or funnel shaped and concentric metal housings or casings forming a container surrounding a circularly cylindrical honeycomb core catalytic member of a material having high temperature durability and a low coefficient of thermal expansion, such as a refractory ceramic material and the container is designed to compensate for the differences in thermal expansion of the material of the converter and the metal material of the assembly of the housings or casings of the container. Thermal insulation material may be provided between the walls of the concentric housings or casings.

3,801,290

METHOD OF PRODUCING A SINGLE CRYSTAL OF ORTHOFERRITE AND THIN PLATELETS THEREOF BY MEANS OF THE FLOATING ZONE METHOD

Hiroshi Makino, and Koichi Matsumi, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 16, 1971, Ser. No. 181,035
Claims priority, application Japan, Oct. 9, 1970, 45-89112
Int. Cl. B01j 17/10
U.S. Cl. 23—305 4 Claims



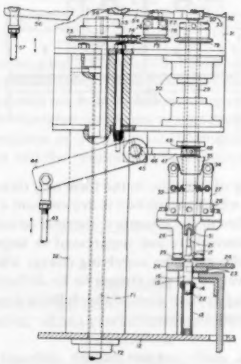
An orthoferrite single crystal is grown by the floating zone method with the growth direction of the crystal perpendicular to the easy axis of magnetic anisotropy by using a starting seed crystal whose easy axis is disposed perpendicular to the growth direction. The thus produced crystal is then cut into thin platelets in which the plane surfaces thereof are perpendicular to the easy axis of magnetic anisotropy.

3,801,291

APPARATUS FOR SEALING HYPODERMIC NEEDLES ON SYRINGE BARRELS

Walter A. Shields, 181-41 Herly Rd., Jamaica, N.Y.

Filed Nov. 28, 1972, Ser. No. 310,090
Int. Cl. B23p 19/04
U.S. Cl. 29—208 B 10 Claims



The skirt of a cap carrying a sheathed hypodermic needle is crimped under the mouth bead of a syringe barrel by a pair of diametrically opposed crimping members pivoted into and out of engagement with said skirt. When the crimping members are in engagement with cap skirt, said members are rotated 540° in one direction and subsequently rotated 540° in the opposite direction. The 1,080° of rotation can be performed on one cap skirt or 540° of rotation can be performed on each succeeding cap skirt in opposite directions.

3,801,292

FIRELIGHTER COMPOSITION IN GELLED FORM WHICH SOLIDIFIES UPON IGNITION

David J. Tanner, Larkhall, Scotland, assignor to Kayford Manufacturing Company Limited, East Kilbridge, Glasgow, Scotland

Filed Apr. 6, 1972, Ser. No. 241,797
Claims priority, application Great Britain, June 25, 1971, 30006/71; Dec. 1, 1971, 55795/71
Int. Cl. C10l 7/00
U.S. Cl. 44—7 C 19 Claims

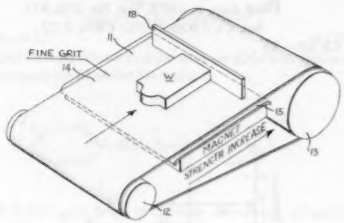
A firelighter composition is a jelly or paste but upon ignition it solidifies, at least at its surface. The composition comprises a dispersion of an organic fuel in a liquid vehicle comprising a polymerisable material that polymerises upon ignition.

3,801,293

METHOD OF MACHINING FERROMAGNETIC WORKPIECES TO TRUE FLATNESS

Fred W. Kiser, Hopkins, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,444
Int. Cl. B24b 1/00, 21/08
U.S. Cl. 51—326 7 Claims



A method of grinding a surface of a ferromagnetic workpiece to true flatness, by first rough grinding the same with a coarse grit endless abrasive belt-type grinder, in which the workpiece is pressed with great force against the convex abrasive surface of a drum-supported abrasive belt, followed by placing the workpiece after it has cooled, on an endless fine grit abrasive belt traveling across and supported by a horizontally oriented flat platten, and drawing the workpiece against the abrasive surface of the traveling belt by magnetic attraction emanating from an electromagnetic located beneath the top stretch of the belt.

3,801,294

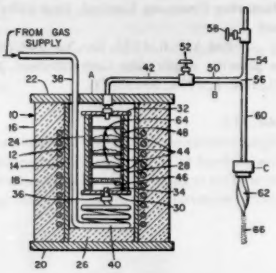
METHOD OF PRODUCING GLASS

Peter C. Schultz, Painted Post, and Francis W. Voorhees, Bath, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,168
Int. Cl. C01b 33/12; C03c 17/00
U.S. Cl. 65—18 7 Claims

An improved method is described for the production of glass by the decomposition of a mixture of glass forming compounds in the flame of a combustible gas to form an oxide mixture which is vitrified. The improvement includes generating vapors from a decomposable solid material that has a vapor pressure equal to 5 mm. Hg at a temperature above ambient

temperature but not over 500°C. The vapors are generated by suspending the material in finely divided form in a heated



chamber and passing a carrier gas through the material. The method is especially useful in the production of modified vitreous silica glasses.

3,801,295

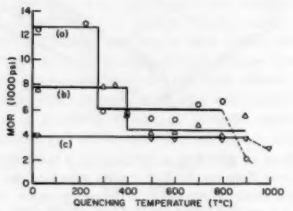
MICA GLASS-CERAMICS

George H. Beall, Big Flats; Chi-Kwun Chyung, Elmira, and Harry J. Watkins, Ithaca, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 1, 1972, Ser. No. 276,971

Int. Cl. C03b *29/00*; C03c *3/22*

U.S. Cl. 65—33 **7 Claims**



This invention relates to the production of glass-ceramic articles wherein the predominant crystal phase is a synthetic fluormica. The articles have compositions with the K_2O-MgO-Al_2O_3-B_2O_3-SiO_2-F field with microstructures consisting of very large (>150 microns), essentially two-dimensional crystals of high aspect ratio uniformly distributed throughout the articles. This feature of easily cleavable flakes dispersed in a brittle matrix imparts excellent machineability, high fracture energy, and superior thermal shock damage resistance.

3,801,296

SHEET GLASS DRAWING

Michael Lambert, Brussels; Hubert Neuzy, Montignies/s/Sambre, and Claude Brichard, Moustier/s/Sambre, all of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

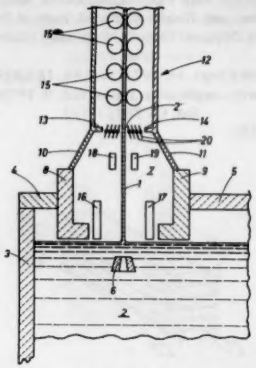
Filed July 14, 1972, Ser. No. 271,759

Claims priority, application Luxembourg, Apr. 14, 1971, 63534; Great Britain, July 6, 1972, 31766/72

Int. Cl. C03b *15/04*

U.S. Cl. 65—95 **18 Claims**

Method and apparatus for improving the quality of a drawn flat glass ribbon by providing for a flow of gas currents between the annealing lehr and the drawing chamber along paths which are in addition to the usual slot that the glass ribbon passes through when moving from the drawing chamber



to the annealing lehr. In certain embodiments gas from the lower portion of the drawing chamber moves into the annealing lehr through special means which are provided.

3,801,297

PROCESS AND APPARATUS FOR DRAWING A CONTINUOUS RIBBON OF GLASS

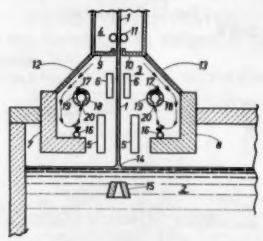
Robert Toussaint, Balen, and Henry Boonen, Westkapelle, both of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed Oct. 10, 1972, Ser. No. 296,317

Claims priority, application Luxembourg, Oct. 15, 1971, 64082

Int. Cl. C03b *15/04*

U.S. Cl. 65—95 **17 Claims**



In the drawing of flat glass in the form of a ribbon in a drawing chamber in which the ribbon is drawn from a molten glass bath and solidifies in the chamber, thermal heterogenieties in the chamber atmosphere are suppressed to improve the surface quality of the glass, by supplying energy which causes at least one relatively cool gas stream to be deflected upwardly and by extracting at least part of the deflected gas stream before it has substantially dispersed.

3,801,298

SUPPORTING AND TEMPERING BENT GLASS PLATES

Albert Bezombes, Paris, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France

Filed Mar. 21, 1972, Ser. No. 236,667

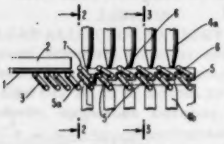
Claims priority, application France, Mar. 22, 1971, 71.09930

Int. Cl. C03b *27/00*

U.S. Cl. 65—104 **12 Claims**

Method and apparatus for supporting and tempering hot glass plates horizontally by flows of cooling fluid applied to the

surfaces thereof which comprises gripping the glass between upper and lower spaced supports of which substantially all of



the lower conform fully to the curvature of the glass, and substantially all of the upper have only spot contact therewith.

3,801,299

APPARATUS FOR PRODUCING HOLLOW GLASS OBJECTS

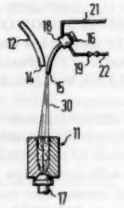
Hans-Dieter Renkl, Herrlingen, Germany, assignor to Deutsche Acheson GmbH, Ulm, Germany

Filed Aug. 16, 1972, Ser. No. 281,045

Claims priority, application Germany, Aug. 18, 1971, 2141455

Int. Cl. C03b *39/00, 5/30*

U.S. Cl. 65—169 **2 Claims**



Prior to introducing a body of fluid glass into a split mold, the wall of the mold cavity, closed except for a charging opening, is sprayed with an atomized lubricating and parting agent from a nozzle operated by means of compressed air, thereby avoiding deposition of the agent on the engaging faces of the mold sections and the resulting surface defects in the shaped glass object.

3,801,300

PROCESS FOR FERTILIZING AND TREATING SOIL CONTAINING NEMATOCIDES AND COMPOSITIONS THEREFOR

Norman W. Standish, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 102,088

Int. Cl. A01n

U.S. Cl. 71—3 **2 Claims**

An aqueous nitrogen fertilizer-nematocide solution comprising a carbamide such as urea and an olefinically unsaturated nitrile such as acrylonitrile is disclosed. The nematocidal properties of the olefinically unsaturated nitrile are enhanced by the combination of the olefinically unsaturated nitrile with the carbamide.

3,801,301

4-CHLOROPHENYL-2-THIENYLIODONIUM TRIFLUOROACETATE AS A PLANT STUNTING AGENT

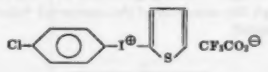
Harvey D. Bidlack, Shepherd, and Dorsey R. Mussell, Clare, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1972, Ser. No. 237,520

Int. Cl. A01n *9/12*

U.S. Cl. 71—76 **1 Claim**

Method of regulating plant growth by the application of a growth regulating amount of 4-chlorophenyl-2-thienyliodonium trifluoroacetate corresponding to the formula



to the plant. Such practice is particularly useful for the regulation of the growth pattern of plant life, particularly as evidenced by the retardation of growth and enhancement of maturation.

3,801,302

HERBICIDAL METHOD

Jacques Perronnet, and Pierre Girault, both of Paris, France, assignors to Roussel UCLAF, Paris, France

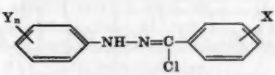
Filed Sept. 15, 1971, Ser. No. 180,852

Claims priority, application France, Sept. 17, 1970, 70.33715

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **4 Claims**

Herbicidal compositions comprising an effective amount of at least one compound of the formula



I

wherein X is selected from the group consisting of hydrogen and lower alkyl of one to six carbon atoms when Y is selected from the group consisting of bromine and chlorine and when Y is hydrogen, X is selected from the group consisting of chlorine, bromine and lower alkyl of one to six carbon atoms and *n* is 1, 2 or 3 and to a method of killing plants.

3,801,303

POROUS REFRACTORY BODY IMPREGNATED WITH MAGNESIUM

Gerald Kotler, Hightstown, and Jairaj Easwaran, Cranbury, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed July 13, 1972, Ser. No. 271,364

Int. Cl. C21c *7/00*

U.S. Cl. 75—58 **18 Claims**

A composition of matter useful for treating a ferrous melt to reduce sulphur content thereof comprising a compressed porous refractory body of an alkaline earth metal oxide containing a ceramic binder, said body impregnated with magnesium, the particle size of the alkaline earth metal oxide beng less than 4 mesh, said refractory body containing at least about 2 parts by weight of alkaline earth metal oxide for each part of binder and said body being impregnated with at least 35 percent by weight of magnesium, based on the total weight of the impregnated composition.

This composition of matter is produced by admixing -4 mesh particles of alkaline earth metal carbonate with a binder, forming pellets of this mixture and firing the pellets to volatilize the carbon dioxide formed. The fired pellets are then immersed into molten magnesium to impregnate the pellets with magnesium metal.

3,801,304

PROCESSES FOR THE CONVERSION OF IRON INTO STEEL

Christian Coets, Vauxsous-Chevremont, Belgium, assignor to Centre De Recherches Metallurgiques-Centrum Voor Research In De Metallurgie, Brussels, Belgium

Filed Jan. 18, 1972, Ser. No. 218,683

Claims priority, application Luxembourg, Jan. 18, 1971, 62434

Int. Cl. C21c *5/34*

U.S. Cl. 75—60 11 Claims

Pure oxygen is blown into the molten bath through the bottom of the converter. During all or part of this refining process, a strongly oxidising gas, such as pure oxygen, is injected through the side wall of the converter below the upper level of the metal.

3,801,305

PROCESS FOR CONTINUOUSLY REFINING METALS, NOTABLY, PIG-IRON

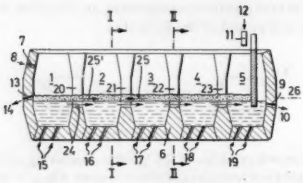
Paul Emile Nilles, Embourg, and Jacques Piret, Luttich, both of Belgium, assignors to Eisenwerk-Gesellschaft Maximilianshutte m.b.H., Sulzbach-Rosenberg, Germany

Filed June 14, 1972, Ser. No. 262,839

Claims priority, application Belgium, June 16, 1971, 43328; Aug. 10, 1971, 43391

Int. Cl. C21c *7/00*

U.S. Cl. 75—60 8 Claims



The present invention concerns a process for continuously refining metals, particularly pig-iron in which one or several nozzles or tuyeres are mounted below the bath surface in one or several associated refining vessels, and a gaseous or liquid protective medium and oxygen are supplied separately through these nozzles. The protective medium consists of hydrocarbons or of hydrocarbonaceous substances.

3,801,306

METHOD FOR THE RECOVERY OF NICKEL FROM MIXED ORES

Maurice Rey, and Victor Formanek, both of Paris, France, assignors to "Le Nickel" and Societe Miniere Et Metallurgioue De Penarroya, both of Paris, France, part interest to each

Filed Sept. 27, 1971, Ser. No. 184,242

Claims priority, application France, Sept. 28, 1970, 70.34961

Int. Cl. C22b *23/02*

U.S. Cl. 75—82 2 Claims

Method for improving the recovery of nickel by magnetic separation of the product resulting from the treatment of a nickeliferous initial material by a segregation process, characterized in that the nickeliferous initial material is obtained by mixing laterite and a second type of ore in which the acid value, i.e., the ratio of the oxygen content of the silica contained in the ore to the oxygen content of the basic components of said ore, is greater than one.

3,801,307

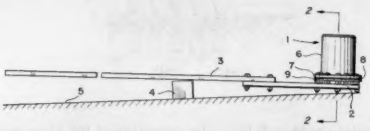
METAL REDUCTION PROCESS

Frank W. Hurd, P.O. Box 14, Le Sueur, Minn.

Continuation-in-part of Ser. No. 833,378, June 16, 1969, abandoned. This application July 26, 1972, Ser. No. 275,257

Int. Cl. G22b *5/00*; C22b *53/00*

U.S. Cl. 75—84.5 15 Claims



An improved metal reduction process permits the efficient production of metals from reducible metal compounds by means of a reducing metal. The reducible metal compound and a stoichiometric amount of a reducing metal are introduced into a sealed reaction zone and heated to a temperature which is above the melting point of the reducing metal but below the temperature at which a reduction reaction between the reducible metal compound and the molten reducing metal will proceed spontaneously. In this temperature range, a reduction reaction is initiated between the reducible metal compound and the molten reducing metal by suddenly disrupting the surface of the molten reducing metal and allowing the reduction reaction to continue to completion.

3,801,308

METHOD FOR THE ADDITION OF METALS TO STEEL

Robert A. Gustison, 96 Grandview Blvd., Reading, Pa.

Filed Sept. 5, 1972, Ser. No. 286,100

Int. Cl. C22c *33/00*; C21c *7/00*

U.S. Cl. 75—129 9 Claims

A process for incorporating a metal in steel by adding to molten iron or steel an intimate mixture, preferably in compacted form, of an oxide of the metal and carbon. The molten iron or steel is at a sufficiently high temperature to initiate a reaction between the carbon and the metal oxide to form, in situ, a metal carbide that readily disperses throughout the molten iron or steel.

3,801,309

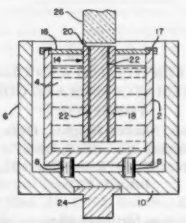
PRODUCTION OF EUTECTIC BODIES BY UNIDIRECTIONAL SOLIDIFICATION

Abraham I. Mlavsky, Lincoln, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,448

Int. Cl. C22c *1/02*

U.S. Cl. 75—135 13 Claims



Eutectic bodies with controlled morphology are produced by establishing a thin liquid film of a eutectic composition on a hot supporting surface, growing a body of said composition

from said film by unidirectional solidification, pulling the body away from the film at a rate consistent with the rate of solidification, and replenishing the film so as to sustain continuous growth.

3,801,310

LEAD ALLOY FOR BATTERY GRID

Subash Nijhawan, Schonberg, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed Oct. 16, 1972, Ser. No. 297,754

Claims priority, application Germany, Oct. 18, 1971, 2151733

Int. Cl. C22c *11/00*

U.S. Cl. 75—166 C **12 Claims**

Lead alloy for the grids of lead storage batteries, which alloy has a low antimony content and which comprises from 1.0 to 3.5 per cent by weight Sb; 0.025 to 0.2 per cent by weight As, 0.005 to 0.1 per cent by weight Se, 0.01 to 0.05 per cent by weight Sn and the remainder lead.

Preferably the alloy contains also 0.025 to 0.1 per cent by weight silver.

3,801,311

METHOD OF INTRODUCING RARE EARTH METALS INTO ADDITION ALLOYS

Nathan Lewis Church, Warwick, and Robert Douglas Schelleng, Suffern, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,402

Int. Cl. C22c *19/00, 23/00*

U.S. Cl. 75—168 J **17 Claims**

A method is provided for preparing alloys comprising nickel, magnesium and rare earth metals in which rare earth oxides are used as the source of the rare earth metals. The rare earth oxides are added to nickel-magnesium melts which contain at least about 35 percent magnesium. The resultant alloys may be tailored to produce alloys suitable for treating cast iron melts.

3,801,312

PERMANENT MAGNET ALLOY USING MOLYBDENUM AND TITANIUM

Robert Steinitz, Montclair, N.J., assignor to Wilbur B. Driver Company

Filed Oct. 20, 1970, Ser. No. 82,500

Int. Cl. C22c *19/00*

U.S. Cl. 75—170 **3 Claims**

A semihard permanent magnet alloy characterized by relatively high coercive force, relatively high residual induction, high ductility and low magnetostriction and consisting essentially of cobalt, iron, titanium and molybdenum. The molybdenum content of this alloy, as expressed in percent by weight, falls within the approximate range 3 – 6 percent. The titanium content falls between 3 – 6 percent. The sum of the cobalt and iron falls within the approximate range 88 – 94 percent. The ratio by weight of cobalt to iron falls within the approximate range 6.5:1 to 7.5:1.

3,801,313

Nb_3Ga BASE SUPERCONDUCTING MATERIALS

Ushio Kawabe; Mitsuhiro Kudo, both of Tokyo, and Shigeo Fukase, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

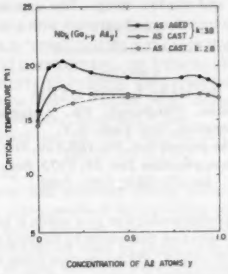
Filed May 19, 1972, Ser. No. 254,901

Claims priority, application Japan, May 20, 1971, 46-34596

Int. Cl. C22c *27/00*; H01f *1/04, 1/14*

U.S. Cl. 75—174 **11 Claims**

A superconducting material having a critical temperature higher by 3° to 5°K than that of and a critical current density several times higher than that of Nb_3Ga provided by replacing a part of atoms in the Ga sites of Nb_3Ga with atoms of one of Al, Mn, Sb, and Y and, when required, replacing a part of atoms in the Nb sites with Ta atoms and by subjecting this intermetallic compound to an aging process at 800°C for 300 hours. This material has a β–W type crystal structure similarly to Nb_3Ga.



3,801,314

IMAGING SYSTEM

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 837,780, June 30, 1969, which is a continuation-in-part of Ser. Nos. 725,676, May 1, 1968, abandoned, and Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, said Ser. No. 725,676, is a continuation-in-part of Ser. No. 460,377, , and Ser. No. 483,675, , and Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 460,377, and Ser. No. 483,675, each is a continuation-in-part of Ser. No. 403,002. This application Nov. 21, 1972, Ser. No. 308,607. The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.

Int. Cl. G03g

U.S. Cl. 96—1 R **1 Claim**

Material from a layer of migration material spaced apart from at least one surface of, but contacting a softenable layer is caused to imagewise selectively migrate to at least locations in depth in the softenable layer, by (A) subjecting said migration material to an imagewise migration force and changing the resistance of said softenable layer, to migration of migration material or by (B) subjecting said migration material to a migration force and imagewise changing the resistance of said softenable layer to migration of migration material.

3,801,315

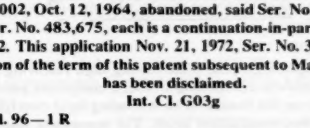
GRAVURE IMAGING SYSTEM

Robert W. Gundlach, Victor; Joseph Mammino; Alan B. Amidon, both of Penfield, and George P. Carr, Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,469

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.4 **11 Claims**



A method of electrostatographic imaging utilizing a gravure member having a conductive backing with a uniform pattern of lands and valleys thereon, with the lands having a surface of

a photoconductive material. A developing medium is applied to the valleys of the gravure member, leaving the land areas substantially clean. After application of the developing medium, the gravure member is uniformly charged and then exposed to a light and shadow image. The exposed member is then brought into transfer configuration with a transfer web.

3,801,316
BICHARGE ZINC OXIDE

Robert S. Bowman, Pittsburgh, Pa., assignor to St. Joe Minerals Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 188,520, Oct. 12, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,670
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.5 **6 Claims**

Conventional photoconductive zinc oxide is converted into bicharge photoconductive zinc oxide by heating with selenium in air at about 300°–600°C. Bicharge zinc oxide is particularly useful as the phtoconductive pigment in photocopy papers.

3,801,317
ELECTROPHOTOGRAPHIC PLATE

Hiroshi Tanaka, and Takao Komiya, both of Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

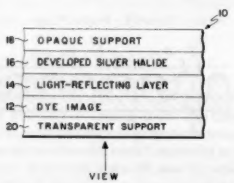
Division of Ser. No. 563,899, July 8, 1966. This application Apr. 14, 1971, Ser. No. 133,789
Claims priority, application Japan, Oct. 28, 1966, 42-65784
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **3 Claims**

An electrophotographic plate having high resolving power and high sensitivity comprising a base, a composite photoconductive layer on the base, and an insulating layer overlying the composite photoconductive layer. The composite photoconductive layer comprises two adjacent layers, one layer contacting the insulating layer and comprising fine photoconductive particles and binder, and the other contacting the base and comprising relatively coarse photoconductive particles and binder.

3,801,318
COLOR DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS AND PROCESSES WITH SULFUR FREE SILVER HALIDE SOLVENTS

Edwin H. Land, Cambridge; Stanley M. Bloom, Waban, and Howard G. Rogers, Weston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 211,718, Dec. 23, 1971. This application Apr. 24, 1972, Ser. No. 246,669
Int. Cl. G03c *7/00, 1/40, 1/28, 1/34*
U.S. Cl. 96—3 **70 Claims**



Diffusion transfer processes are disclosed wherein the dye image is retained with the developed silver halide emulsion(s) as part of an integral negative-positive reflection print. Use of a silver halide solvent which is free of sulfur atoms gives advantageous results.

3,801,319
IMAGING METHOD UTILIZING CHEMICAL REACTIVITIES OF PHOTOEXCITED STATES OF AROMATIC HYDROXY COMPOUNDS

Franklin D. Saeva, Fairport, and Donald E. Sargent, Schenectady, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 21, 1972, Ser. No. 265,053
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 R **17 Claims**

An imaging process employing the excited state reactivities of aromatic hydroxy materials to produce a visible image.

3,801,320
PHOTOIMAGING IN PRESENCE OF OXYGEN

Floyd B. Erickson, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 18, 1971, Ser. No. 190,337
Int. Cl. G03c *1/68, 5/24*
U.S. Cl. 96—48 R **13 Claims**

This invention concerns a photoimaging procedure in which the image is characterized by a differential concentration of sulfate groups, depending upon the degree of light exposure, and is developable by selective absorption of dyes and other procedures. The sulfate groups can be obtained by SO_2 treatment of hydroperoxy groups produced in a photoxidation imaging procedure.

3,801,321
PHOTOTHERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Francis J. Evans, and Donald F. McLaen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 18, 1972, Ser. No. 272,832
Int. Cl. G03c *5/24, 1/02*
U.S. Cl. 96—48 HD **18 Claims**

A sulfonamidophenol reducing agent in photothermographic elements, compositions and processes provides improved processing temperature latitude. Certain of the sulfonamidophenol reducing photothermographic can be employed in photobermographic materials in the absence of activator toning agents. The photothermographic materials can contain addenda commonly employed in photothermographic materials such as sensitizing dyes, image stabilizers and stabilizer precursors, and various photosensitive compounds.

3,801,322
IMPROVED PROCESS FOR PREVENTING THE DISCOLORATION OF A COLOR IMAGE AND IMPROVING IMAGE STABILITY

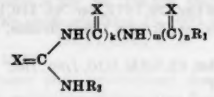
Kazuo Shirasu; Hiroyuki Amano, and Reiichi Ohi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Division of Ser. No. 110,291, Jan. 27, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,917
Claims priority, application Japan, Jan. 27, 1970, 45-7201
Int. Cl. G03c *7/00, 7/16*
U.S. Cl. 96—56 **10 Claims**

In a process for preventing the discoloration of a color image by developing an exposed silver halide color photographic material, removing the silver image thus formed together with the residual silver halide and stabilizing the thus

formed color image with a stabilizing solution, the improvement which comprises employing a stabilizing solution containing:

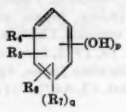
a. at least one compound represented by the general formula (1):



(1)

wherein R_1 represents a member selected from the group consisting of a hydrogen atom, an alkyl group, an allyl group, an aryl group and NHR_3; R_2 and R_3 represent a member selected from the group consisting of a hydrogen atom, an alkyl group, a carboxyalkyl group, a sulfoalkyl group, an allyl group and an aryl group; said R_1 and R_2 may combine with each other to form a 5-membered or 6-membered heterocyclic ring; X represents =O or =NH; and k, m, and n are 0 or 1, and

b. at least one compound represented by the general formula (2):



(2)

wherein R_4, R_5, R_6 and R_7 each represent a member selected from the group consisting of a hydrogen atom, an alkyl group, a halogen atom, a carboxylic acid group, a sulfonic acid group, and —CH=NOH; p is 2 or 3, q is 0 or 1, and $p+q$ is always 3.

3,801,323

METHOD OF DEVELOPING SILVER HALIDE PHOTOSENSITIVE MATERIAL

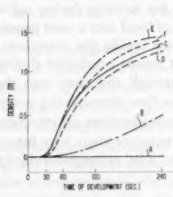
Atsuaki Arai; Kinji Ohkubo; Tatsuya Tajima; Mitsugu Tanaka, and Yoshinori Tsuchiya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1971, Ser. No. 192,952

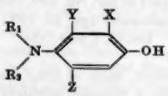
Claims priority, application Japan, Oct. 27, 1970, 45-94882

Int. Cl. G03c 5/30, 1/06

U.S. Cl. 96—66 R **19 Claims**



A photographic developing process is disclosed which comprises developing an exposed light-sensitive silver halide emulsion layer of a photographic material with an alkaline solution in the presence of hydroquinone and a derivative of p-aminophenol having the general formula



wherein each of X and Y is selected from the group consisting of a hydrogen atom, an alkyl group having one to four carbon atoms or an alkoxy group, Z is selected from the group consisting of an alkyl group having one to four carbon atoms and an alkoxy group, and each of R_1 and R_2 is an alkyl group having one to four carbon atoms.

3,801,324

NON-CONFLICTING DOUBLE IMAGE PHOTOGRAPHIC FILM EMPLOYING SILVER BASED AND PHOTOFLUORESCER COMPOUNDS

Robert Harrison Postal, Clifton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,280

Int. Cl. G03c 1/92

U.S. Cl. 96—82 **7 Claims**

Photographic film element having photographic medium and optically active medium for providing identifying indicia, the optically active medium being a compound which is converted to a fluorescent state by short wave ultraviolet radiation and may be read by longer wave ultraviolet.

3,801,325

PHOTOGRAPHIC ARTICLE WITH ANTI-STATIC METAL HALIDE LAYER SYSTEM OF REDUCIBLE OPTICAL DENSITY

Arthur A. Rasch, Webster, and Herbert B. Cowden, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1972, Ser. No. 256,076

Int. Cl. G03c 1/78

U.S. Cl. 96—87 A **28 Claims**

A photographic article having a hydrophilic colloid coating located on a dielectric support is protected against the accumulation of static electrical charge by the provision of a layer system having a conductive layer with a surface resistivity of less than 10^{12} ohms per square. A protective layer formed of a metal halide overlies the conductive layer and, optionally, a second protective layer may be interposed between the conductive layer and the support. The layer system may be reduced in optical density by aqueous oxidizing solutions also useful in processing the photographic article following its exposure.

3,801,326

CONTINUOUS METHOD OF PREPARING SILVER HALIDE EMULSIONS

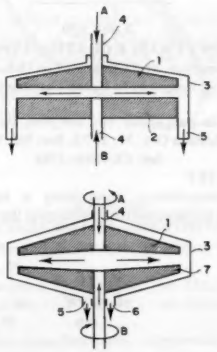
Frans Henri Claes, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium

Filed Mar. 31, 1971, Ser. No. 129,664

Claims priority, application Great Britain, Apr. 3, 1970, 15948/70

Int. Cl. G03c 1/02

U.S. Cl. 96—114.7 **10 Claims**



Liquids which form a poly-phase system when mixed are mixed by means of forces creating turbulence therein, such as

shearing forces created by rotating the walls of a mixing passageway at velocities sufficient for turbulent flow. Preferably the liquid contains dissolved reactants which react to form a dispersion in situ, such as a silver salt and a halide salt which react in aqueous solution to form a silver halide dispersion.

3,801,327

O-DITHIALANE-PHOTOSENSITIVE COMPOSITIONS

Wayne M. Moreau, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1970, Ser. No. 52,131

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **30 Claims**

A photoresist composition for use in photolithographic and photomechanical processes comprising organic solvent-soluble colloids sensitized with 1,2 dithiacycloalkane compounds, as well as photosensitive compositions comprising 1,2 dithiacycloalkane alkanoate esters of hydroxy containing colloids; and light sensitive elements coated with such compositions.

3,801,328

PHOTOPOLYMER PRINTING PLATE AND ITS PRODUCTION

Yasuyuki Takimoto, Osaka; Toshikazu Yoshikawa, Amagasaki; Kiyomi Sakurai, Osaka; Yasusi Umeda, Osaka, and Takeshi Hirayama, Osaka, all of Japan, assignors to Nippon Paint Company, Ltd., Oyodu-ku, Osaka, Japan

Continuation-in-part of Ser. No. 126,998, March 22, 1971, abandoned. This application Feb. 11, 1972, Ser. No. 225,588

Claims priority, application Japan, Mar. 27, 1970, 45-25808

Int. Cl. G03f *7/10*

U.S. Cl. 96—115 P **20 Claims**

A photopolymer printing plate developable with water which comprises a support material, the adhering surface of which is abraded, and a layer of a water-soluble photosensitive resin composition comprising at least one unsaturated ethylenic compound, preferably having a boiling point above 100°C., a molecular weight below 1,500 and one to four polymerizable ethylenic groups, said ethylenic compound being polymerizable by means of actinic light in the presence of a photopolymerization initiator, a photopolymerization initiator and a partially saponified polyvinyl acetate. The plates may be used as printing plates as such or can be used to prepare relief images.

3,801,329

RADIATION CURABLE COATING COMPOSITIONS

Michael Ray Sandner, and Claiborn Lee Osborn, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 209,066, Dec. 17, 1971. This application Oct. 31, 1972, Ser. No. 302,574

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 P **47 Claims**

Coating compositions comprising a liquid vehicle, a colorant and a photosensitizer containing the structural group

in which R is an alkyl or aryl group and R′ is hydrogen, alkyl, aryl, or cycloalkyl.

3,801,330

PHOTOGRAPHIC SILVER HALIDE RECORDING MATERIAL

Eric Maria Brinckman, Mortsel; Frans Clement Heugebaert, Kontich, and Renaat Andreas Ceulemans, Deurne, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Dec. 20, 1971, Ser. No. 210,120

Claims priority, application Great Britain, Dec. 21, 1970, 60633/70

Int. Cl. G03c *5/30, 1/06, 1/02*

U.S. Cl. 96—66 T **14 Claims**

A photosensitive heat-developable element comprising a silver halide emulsion, a developing agent and a post-exposure stabilizing agent. The post-exposure stabilizing agent can be for example, 3-allylimidazolin-2-thione. After exposure, an image can be developed and stabilized in one step by heating to a temperature within the range of about 80°–200°C.

3,801,331

FRYING APPLIANCE

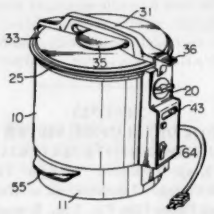
Yoshiaki Sano; Tomio Ishikawa; Yoshitaka Hirose, and Yasumasa Mike, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadome City, Japan

Filed Oct. 10, 1972, Ser. No. 296,048

Claims priority, application Japan, Apr. 17, 1972, 47-38838

Int. Cl. A47j *37/12*

U.S. Cl. 99—403 **10 Claims**



An improved frying appliance for frying foodstuffs, comprising a water-filled basin including a distributing disc having a plurality of openings therein and a spout providing communication between the space inside the basin with the atmosphere, a container for holding frying oil having a basket for receiving an article of food and a vent providing communication between the space inside the container and the space inside the basin so that fumes produced during frying operation are discharged through the vent into the water in the basin and are allowed to flow through the water in the form of bubbles, the bubbles being broken up into smaller bubbles as they float upward and squeeze their way into the openings of the distributing disc, and a lid arranged fluid-tightly on the rim of the container.

3,801,332

ORGANIC MERCURY COMPOSITIONS

Eugene L. Cadmus, Glen Ridge, N.J., assignor to Ventron Corporation, Beverly, Mass.

Continuation-in-part of Ser. No. 889,350, Dec. 30, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,621

Int. Cl. C09d *5/14*

U.S. Cl. 106—15 AF **10 Claims**

Coating compositions, such as latex and oil-based paints, contain, as a biocide, a biocidal effective amount of an organomercuric composition which contains 50–90 percent, by weight, polymercurated benzene and the remainder monomercurated benzene.

3,801,333

FLAME RETARDANT AND INTUMESCENT COMPOSITIONS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Division of Ser. No. 104,149, Jan. 5, 1971, Pat. No. 3,728,138, which is a division of Ser. No. 726,538, May 3, 1968, Pat. No. 3,639,535. This application Oct. 13, 1972, Ser. No. 297,397

Int. Cl. C09d *5/18*

U.S. Cl. 106—15 FP **2 Claims**

Novel adjuvants and combinations thereof are provided which have the properties of importing flame-retardancy and intumescence to polymeric materials. The new adjuvants comprise halogenated and phosphorus-containing adjuvants of diallyl chlorendate and mineral acid salts of phenylbiguanidine derivatives. The latter may be advantageously combined with a wide variety of phosphorus-containing compounds, including especially, novel diallyl chlorendate derivatives to provide intumescent films and coatings.

3,801,334

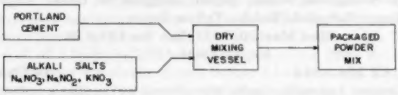
SALT CASTING MIXTURES

Frank C. Dewey, Jr., 5246 N. Magnolia, Chicago, Ill.

Filed Sept. 25, 1972, Ser. No. 291,834

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.3 **5 Claims**



Alkali metal nitrates and nitrites are useful as core material for making disposable cores, mandrels and other forms for use in making hollow plastic articles. The improvement discloses adding Portland cement as a method for improving the structural strength of such cores while providing a long storage life.

3,801,335

PATTERN WAX COMPOSITION

Allen E. Larson, Chicago, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 90,126

Int. Cl. B28b *7/34*; **C08h** *17/14*

U.S. Cl. 106—38.8 **16 Claims**

Novel pattern wax composition for use in investment casting by the Lost Wax Process are disclosed. The pattern materials consist essentially of waxes such as petroleum waxes, natural vegetable or mineral waxes, synthetic waxes and various resinous materials derived from the refining of petroleum and wood rosin, and mixtures of the above. The base wax generally has a melting point of between about 120 to 180°F. The base wax composition is improved by the inclusion of up to about 75 percent by weight, preferably up to about 50 percent by weight of solid filler particles of pentaerythritol or oligomer thereof. Pentaerythritol is the preferred filler.

3,801,336

LEAD BOROSILICATE OPTICAL GLASS ADAPTABLE TO FUSION WITH PHOTOCHROMIC GLASS TO PRODUCE MULTIFOCAL LENS

Lee O. Upton, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,835

Int. Cl. C03c *3/08, 3/10, 3/30*

U.S. Cl. 106—53 **10 Claims**

A high index of refraction, low softening point, low expansion segment glass is fused into a countersunk photochromic glass blank of lower index of refraction. The high index of refraction segment is primarily composed of SiO_2, B_2O_3 and PbO with lesser amounts of other oxides.

3,801,337

SINTERING AIDS FOR PRODUCING ALUMINA DIELECTRIC COMPOSITIONS COFIREABLE WITH PALLADIUM

Joel Alfred Conwicke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 101,166, Dec. 23, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,733

Int. Cl. C04b *33/26*; **H01b** *3/12*

U.S. Cl. 106—73.4 **11 Claims**

Sintering aids for producing dielectric compositions of alumina which may be sintered at or below 1,500°C. and, hence, may be cofired with palladium metallizations. These sintering aids are glass frits made from certain critical combinations of oxides. Also dielectric compositions of 75–97 percent alumina and 3–25 percent sintering aid, and articles comprising ceramic dielectric substrates made from those dielectric compositions.

3,801,338

CEMENT ADDITIVES

Granville Whitaker, Hemel Hempstead, England, assignor to Fosroc A.G., Zug, Switzerland

Filed July 10, 1972, Ser. No. 270,358

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **13 Claims**

An additive for hydraulic cement comprises a major amount of sodium nitrite in admixture with a minor amount of calcium formate, optionally with triethanolamine or sodium benzoate.

3,801,339

EXPANSIVE ADDITIVE FOR LIME CEMENT AND PROCESS FOR THE PREPARATION OF THE SAME

Hirokatsu Ogura; Tatsuo Takizawa, both of Tokyo; Yoshizo Ono, and Yukuo Taketsume, both of Niigata, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 43,050, June 3, 1970, abandoned. This application Aug. 6, 1971, Ser. No. 169,811

Claims priority, application Japan, June 3, 1969, 44-42920

Int. Cl. C04b *13/22*

U.S. Cl. 106—97 **4 Claims**

An expansive additive composition for use in controlling the expansion of cement on aging comprising a sintered mixture of lime and at least one additive selected from the group consisting of ferric oxide, calcium fluoride and calcium sulfate is disclosed. The process for preparing the expansive additive composition is also disclosed.

3,801,340

BRITTLE COATING COMPOSITIONS

Greer Ellis, Pelham, N.Y., assignor to Vishay Intertechnology, Inc., Malvern, Pa.

Filed May 23, 1972, Ser. No. 256,048

Int. Cl. C08g *51/30*; **G09h** *11/04*; **G01n** *33/00*

U.S. Cl. 106—238 **8 Claims**

Highly sensitive, non-flammable, substantially odorless brittle coating compositions are disclosed for use in experimental stress analysis. The brittle coating compositions include a resin, a solvent, a plasticizer, a wetting agent and water.

3,801,341

COMPOSITIONS FOR SEALING PAVEMENT

Homer L. Draper, and Duane W. Gagle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1971, Ser. No. 181,596
Int. Cl. C08h *13/00, 17/08, 17/22*
U.S. Cl. 106—282 **6 Claims**

Compositions comprising cut-back, air-blown asphalt, asbestos fibers and fluidized coke derived from the refining of heavy crude oils when used to seal pavement surfaces display improved anti-skid properties and resistance to wear.

3,801,342

MANUFACTURE OF LIGNITE BINDER PITCH

John S. Berber, and Richard L. Rice, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 16, 1970, Ser. No. 89,671
Int. Cl. C08h *13/00, 17/08;* **C10c** *3/00*
U.S. Cl. 106—284 **6 Claims**

Binder pitch suitable for metallurgical electrode production is prepared from crude pitch obtained from the low-temperature carbonization of lignite. Aliphatic hydrocarbons contained in the crude pitch are removed by solvent extraction prior to thermal treatment such as delayed coking or thermal cracking. Binder pitch product is recovered as a residual fraction of the oil produced in the thermal treatment.

3,801,343

PREPARATION OF GRANULAR AGGREGATE FOR USE IN CONCRETE OBJECTS AND STRUCTURES

Jan C. Lemmens, Beek (L), Netherlands, assignor to Stamicarbon N.V., Heerlan, Netherlands

Continuation of Ser. No. 40,383, May 25, 1970, abandoned. This application Feb. 25, 1972, Ser. No. 229,587
Int. Cl. C08h *17/02*
U.S. Cl. 106—288 B **2 Claims**

The invention relates to a process of preparing a lightweight granular aggregate for use in concrete objects and structures, by an intimately mixing a clayey material with materials that help to reduce the weight, granulating this mixture and then heating the granules at least to the temperature at which their mass expands. Use is made of a combination of two known auxiliary materials, the first being a porous inorganic material with open pores, added in an amount of 10–20 percent by volume with respect to the clayey material, and substantially having a grain size below 2 mm., and the second consisting of one or more substances that, upon heating, yield gaseous components at a temperature over 800° C. Use is made of a porous inorganic material having a softening temperature equal to or lower than that of the clayed material.

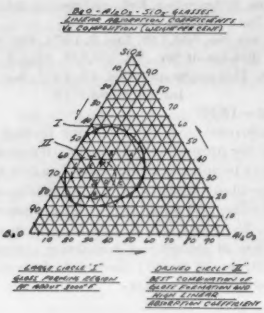
3,801,344

TOOTH FILLING AND FACING COMPOSITIONS COMPRISING A RADIOPAQUE GLASS AND METHOD OF MAKING THE SAME

Earl D. Dietz, Toledo, Ohio, assignor to Owens-Illinois, Toledo, Ohio

Division of Ser. No. 12,109, Feb. 17, 1970. This application June 30, 1971, Ser. No. 158,547
Int. Cl. A61k *5/00;* **C09c** *1/36;* **C09k** *3/00*
U.S. Cl. 106—300 **11 Claims**

A filler composition for tooth filling and facing compositions comprising (1) a finely divided inorganic material, and (2) a barium aluminosilicate glass or other glass having an effective amount of radiopaque oxide that renders the resultant glass radiopaque to X-rays used by dentists. The filler composition is mixed with an organic polymer such as methyl methacrylate to provide a tooth filling and facing composition having an outstanding combination of desirable properties including a color resembling that of natural teeth, a suitable



index of refraction, hardness, wear resistance, a relatively low thermal expansion matching that of natural teeth, and being radiopaque to X-rays used by dentists.

3,801,345

PROCESS FOR PRODUCING CEMENT EXPANDING AGENTS

Koji Nakagawa, Asahi, Japan, assignor to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1971, Ser. No. 129,420
Int. Cl. C04b *13/22*
U.S. Cl. 106—314 **10 Claims**

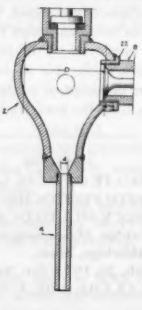
Cement expanding agent is produced by burning a raw mixture containing CaO, Al_2O_3, SO_3 and F, wherein the weight ratio of CaO/Al_2O_3 is 0.5 to 20, 0.2 to 20 percent by weight of an inorganic fluoride and 30 to 80 percent by weight of $CaSO_4$ are contained, in a directly heating electric resistance furnace at the electrode AC voltage of 20 to 400 V and the electrode current density of 0.8 to 8.0 Amp./cm² and cooling the fused body under a particular condition.

3,801,346

METHOD FOR APPLYING PARTICULATE COATING MATERIAL TO A WORK PIECE

Rosser B. Melton, Jr., Helotes; John M. Clark, Jr., Seguin; Ronald J. Mathis, San Antonio; William D. Weatherford, Jr., San Antonio, and Charles D. Wood, III, San Antonio, all of Tex., assignors to H. B. Zachrey Company, San Antonio, Tex.

Filed Nov. 15, 1971, Ser. No. 198,806
Int. Cl. B44c *1/08;* **B44d** *1/08*
U.S. Cl. 117—16 **13 Claims**



A system for applying particulate coating material to a work piece, in which the particulate material is directed against the

work piece in a series of pulses. Each pulse includes an initial step of feeding a charge of combustible gaseous mixture into a combustion chamber provided with an outlet nozzle. The combustible mixture is ignited and the outflow of gaseous mixture through the nozzle is constricted sufficiently to cause a rapid pressure rise during combustion to a peak value, followed by a period of falling pressure during continued outflow of the combusted mixture through the nozzle. A charge of the particulate coating material is injected into the combustion chamber for a brief period which terminates while the pressure in the chamber is at least a substantial proportion of the peak pressure. The outflow of combustion mixture and entrained particulate material is directed through the nozzle at high velocity against the work piece to cause the particulate material to form a coating on the work piece.

3,801,347

COVERING

Peter Keller, Hiltrup/Westf., Germany, assignor to Glasurit-Werke M. Winkelmann A.G., Hamburg-Wandsbek, Germany

Continuation of Ser. No. 803,433, Feb. 28, 1969, abandoned. This application Dec. 16, 1971, Ser. No. 208,900

Claims priority, application Austria, Mar. 8, 1968, 2316/68

Int. Cl. B05b *5/02*

U.S. Cl. 117—17 **1 Claim**

A method of preparing a seamless carpetlike floor covering comprising applying a layer of a solvent-free liquid two component plastic system of resin and hardener to an inside floor or wall of a building, electrostatically spraying fiber flocking material onto the plastic system before it hardens, and hardening the plastic system with the flock material imbedded therein.

3,801,348

METHOD OF APPLYING A COATING OF HEAT HARDENABLE THICKENED EPOXY RESIN MASSES

Dietrich Helm, Unna, Germany, assignor to Schering AG, Bergkamen, Germany

Division of Ser. No. 150,755, June 7, 1971, abandoned. This application Sept. 21, 1972, Ser. No. 290,817

Claims priority, application Germany, June 12, 1970, 2030054

Int. Cl. B44d *1/094*

U.S. Cl. 117—21 **1 Claim**

A method of applying a coating of comminuted particles of a heat hardenable epoxy resin to a surface and then heating said particles at a temperature of 150° to 180° C to produce a hardened resinous coating. The heat-hardenable epoxy resin masses ranging from a soft to a brittle consistency are prepared by thickening, at a temperature from 20° to 120° C., a mixture of (1) a liquid epoxy resin, (2) dicyandiamide, and (3) a tertiary amine accelerator, in the presence of a monoamine or diamine.

3,801,349

COATING A CONTINUOUS METALLIC STRIP WITH PULVERANT MATERIAL WITH A NON-DESTRUCTIVE MEASURING METHOD

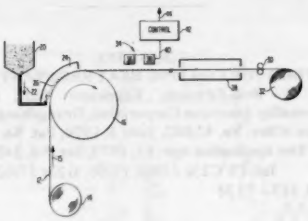
Walter A. Wilson, Pittsburgh, and Glenn W. Bush, Coraopolis, both of Pa., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 7, 1970, Ser. No. 62,019

Int. Cl. B44d *1/34*; **C23c** *17/00*; **B23p** *3/06*

U.S. Cl. 117—31 **8 Claims**

Characteristics of a pulverant material coating or its supporting surface can be determined by measurement of diffused energy return after impingement with beam of light, ultraviolet, infra-red, monochromatic light, or the like. Methods and apparatus for non-destructive measurement of characteristics such as coating thickness during electrostatic coating process for metallic powder on a continuous metallic strip are provided.



3,801,350

HIGH MODULUS GRAPHITE FIBERS HAVING IMPROVED BONDING PROPERTIES

Richard J. Dauksys, Bellbrook, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 5, 1972, Ser. No. 250,714

Int. Cl. B44d *1/14*, *1/092*

U.S. Cl. 117—47 R **5 Claims**

A process for improving the bonding properties of high modulus graphite fibers is provided that comprises treating the fibers with a solution of sodium iodate in aqueous dioxane; washing and drying the treated fibers; contacting the treated fibers with a solution of tin tetrachloride in 2-butanone; and heating the fibers to remove the 2-butanone. An epoxy resin composite having a greatly improved interlaminar shear strength is obtained when the treated graphite fibers are employed as a reinforcing material for epoxy resins.

3,801,351

TREATMENT OF HIGH MODULUS GRAPHITE FIBERS TO IMPROVE THEIR BONDING CHARACTERISTICS

Richard J. Dauksys, Bellbrook, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 5, 1972, Ser. No. 250,715

Int. Cl. B44d *1/14*, *1/092*

U.S. Cl. 117—47 R **5 Claims**

A method of improving the bonding characteristics of high modulus graphite fibers is provided that comprises treating the fibers with a solution of osmium or ruthenium tetroxide and sodium iodate in water, dioxane or aqueous dioxane; washing and thereafter drying the treated fibers; contacting the treated fibers with a solution of tin tetrachloride in 2-butanone; and heating the fibers to remove the 2-butanone solvent. When graphite fibers so treated are used as a reinforcing material for epoxy resins, a composite is obtained that has a greatly improved interlaminar shear strength.

3,801,352

PROCESS FOR PREPARING HARD COATED FILM HAVING SCRATCH RESISTANCE

Shigemasa Furuuchi; Akira Nishihara; Yasuharu Okajima, all of Yokohama, and Tadatoshi Kamimori, Tokyo, all of Japan, assignors to Asahi Glass Company Limited, Tokyo, Japan

Filed June 2, 1972, Ser. No. 259,017

Int. Cl. B44d *1/14*, *1/44*

U.S. Cl. 117—62 **5 Claims**

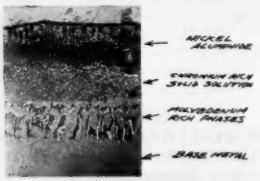
A scratch resistant film is prepared by coating a thin hard inorganic layer of SiO_{1+x}, wherein x ranges from o to 1, onto a

substrate, applying a polymerizable ethylenically unsaturated monomer or oligomer thereon and solidifying said monomer or oligomer.

3,801,353
METHOD FOR COATING HEAT RESISTANT ALLOYS

Harry W. Brill-Edwards, Edgewater, N.J., assignor to Chromalloy American Corporation, Orangeburg, N.Y.

Division of Ser. No. 43,082, June 3, 1970, Pat. No. 3,694,255.
This application Apr. 11, 1972, Ser. No. 242,951
Int. Cl. C23c *11/00, 13/00;* **G23c** *17/02*
U.S. Cl. 117—71 M **9 Claims**



The substrate of a heat resistant alloy is coated with an oxidation resistant coating metal while substantially avoiding the formation of an internally oxidized structure within the coating by embedding a heat resistant alloy article to be coated in a cementation pack comprising said coating metal (e.g. chromium) which has a lower propensity to oxidize than an oxidation resistant solute metal in the alloy (e.g. aluminum), and then subjecting the alloy article to pack cementation at an elevated temperature while maintaining the oxygen in the pack at a partial pressure below the oxygen threshhold level at which the alloy is subject to internal oxidation.

3,801,354
PROCESS FOR ADHERING ACRYLICS TO CHROME

George A. Rist, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 7, 1972, Ser. No. 242,193
Int. Cl. B32b *15/08;* **B44d** *1/14*
U.S. Cl. 117—75 **20 Claims**

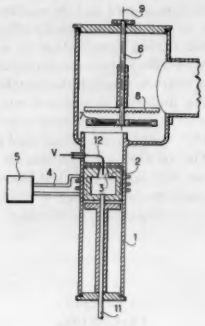
There is provided a process for adhering acrylic finishes to chrome wherein prior to application of the acrylic finish this chrome surface is treated with a primer comprising a vinyl chloride, vinyl acetate, dibasic acid interpolymer and the acrylic finish and primer are cured simultaneously at a temperature of at least 235°F.

3,801,355
PLASMA DEPOSITION OF THIN LAYERS ON SUBSTRATES

Jean Lear Van Cakenberghe, Mons, Belgium, assignor to Compagnie Industrielle Des Telecommunication Cit-Alcatel, Paris, France

Filed Apr. 20, 1972, Ser. No. 246,019
Claims priority, application Belgium, Apr. 27, 1971, 766345
Int. Cl. C23c *11/08*
U.S. Cl. 117—93.1 GD **2 Claims**

A method for producing thin layers of coating substances on substrates by plasma evaporation, comprising shaping a coating substance as a hollow body, passing a non-reactive gas through the body and subjecting the gas while in the body to an electromagnetic field to form a plasma. Coating material is

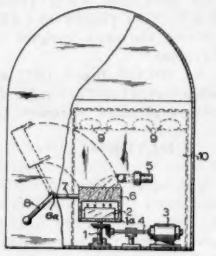


vaporized from the interior of the body by the plasma, entrained in the gas and carried by the gas to a substrate on which it is deposited in a thin layer.

3,801,356
METHOD OF PRODUCING VITREOUS LAYERS ON SUBSTRATE MATERIALS

Hans-Otto Mulfinger, Alemannenstrasse 24, Ingelheim/Rhine; Hubert Dutz, Max-Planck-Strasse 18, Mainz-Gosenheim, and Hans-Georg Krolla, Westring 285, Mainz-Mombach, all of Germany

Continuation-in-part of Ser. No. 791,427, Jan. 15, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,020
Int. Cl. C23c *13/04*
U.S. Cl. 117—93.3 **3 Claims**



A method of producing vitreous layers on any type of substrate material in which an alkali-containing multi-component glass having at the most 10 percent by weight of alkali oxide is heated in an electron beam furnace to a glowing condition and then is subjected to the action of the electron beam which vaporizes the pre-heated glass and deposits it on the substrate material.

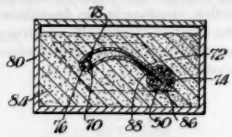
3,801,357
DIFFUSION COATING

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Co., Inc., Wilmington, Del.

Continuation of Ser. No. 837,811, June 30, 1969, abandoned.
This application Jan. 20, 1972, Ser. No. 219,514
Int. Cl. C23c *9/02*
U.S. Cl. 117—107.2 P **17 Claims**

Diffusion coating of superalloys with aluminum is effectively prevented at desired locations by masking with nickel or

cobalt aluminide having less than one atom of aluminum for each atom of nickel or cobalt, and packed against those locations. Chromium, silicon, iron or any combination of them can be coated along with the aluminum as by alloying with the aluminum used to provide the coating, and particularly effective



particle size of such alloys is about 1 micron. Such sizes are produced by simultaneous magnesothermic reduction. Molybdenum and tungsten silicide particles can also be produced in this small size by such reduction and make effective diffusion coating materials. Diffusion coating can also be confined to restricted portions of work pieces without the above masking.

3,801,358

REFUSE AND SEWAGE POLYMER IMPREGNATED CONCRETE

Meyer Steinberg, Huntington Station, and Gerald Farber, Elmont, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 22, 1972, Ser. No. 236,965

Int. Cl. B65b *1/20;* **B05c** *3/02*

U.S. Cl. 117—113 **4 Claims**

A load bearing composite and a method of producing such a product comprising sewage and refuse bound in a cement and penetrated with a polymer for strength and water impermeability.

3,801,359

IMPREGNATION OF COMMUNICATION CABLES WITH SOLID FILLING COMPOUND

Fred F. Polizzano, Allendale; Stanton M. Smith, West Orange, and Edward S. Swiatovy, Piscataway, all of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,637

Int. Cl. B44d *1/09*

U.S. Cl. 117—115 **7 Claims**

This invention fills communication cables with a filling compound of petrolatum mixed with some polyethylene to prevent dripping at temperatures of 80°C and below. A rapid cooling of certain compounds from above the melting point changes the characteristics of the compound so as to bring the drip temperature to this value. An impregnator apparatus is supplied with metered quantities of the compound at a rate coordinated with the speed of travel of a cable through the impregnator apparatus; and the cable is impregnated with the water repellent compound in a solid though soft condition (as opposed to liquid), and with uniform results lengthwise of the cable. The cable itself acts as the impeller for the compound in the impregnator; and the impregnator is kept full under pressure by a pump with a by-pass.

3,801,360

METHOD FOR CONTROLLING THE LEVEL OF THE PRESSURE IN THE LOW PRESSURE PHASE OF AN OSCILLATING PRESSURE IMPREGNATING PROCESS

Sven-Eric Dahlgren, Landskrona, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

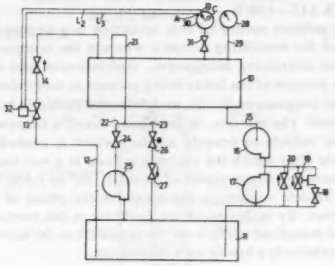
Filed Oct. 20, 1971, Ser. No. 190,886

Claims priority, application Sweden, Oct. 22, 1970, 14277/70

Int. Cl. B05c *3/00;* **B44d** *1/26*

U.S. Cl. 117—116 **4 Claims**

A method in the impregnation of wood, and other material liable to boideterioration, when applying the oscillating pressure principle, in which the preservative solution and the material are subjected to alternating phases of high and low pressure and in which, during the low pressure phase, the preservative solution is drawn from a source of such solution



to the treatment vessel and through said vessel while controlling the flow of solution thereto in a manner to maintain a set point pressure in said vessel which conforms with a predetermined pressure pattern.

3,801,361

COATED GLASS SURFACE

Walter Kitaj, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 17, 1971, Ser. No. 181,615

Int. Cl. B03c *17/30, 17/32*

U.S. Cl. 117—124 E **2 Claims**

A glass surface is provided with a scratch-resistant, lubricous, substantially transparent and colorless coating by applying to the hot glass surface an aqueous composition comprising polyethylene and a silane having, attached to the silicon atom, three hydrolyzable radicals of the class consisting of methoxy, ethoxy and chloro, and one alkyl or acyl radical having from 12 to 18 carbon atoms.

3,801,362

METHOD FOR IMPREGNATING CELLULOSIC SUBSTRATES

James Derek Birchall, Norley; John Edward Cassidy, Hartford, and Douglas Norton Buttrey, Broxbourne, all of England, assignors to Imperial Chemical Industries, Limited, London, England

Filed Dec. 10, 1971, Ser. No. 206,914

Claims priority, application Great Britain, Dec. 11, 1970, 59020/70

Int. Cl. D06m *13/26;* **B32b** *23/04*

U.S. Cl. 117—143 B **14 Claims**

Treating a cellulosic substrate, e.g., paper, wood or cork, by impregnating the surface with a complex phosphate of aluminium containing halogen and chemically bound molecules of a hydroxy compound which may be water or an organic hydroxy compound, and curing the complex, preferably by gentle heating. The complex is most conveniently used in solution in water or an organic solvent e.g., methanol, and the solution may contain further materials, e.g., an organic polymer. Products are more durable and less permeable than the original cellulosic materials.

3,801,363

METHOD FOR METALIZING CERAMIC

Robert W. Buck, Wheat Ridge, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Division of Ser. No. 11,869, Feb. 16, 1970, Pat. No. 3,661,595.
This application Feb. 7, 1972, Ser. No. 224,337
Int. Cl. B44d 1/46; C04b 41/14
U.S. Cl. 117—160 R 4 Claims

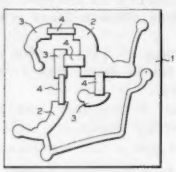
The subject matter of this invention is a composition and method for metalizing ceramic wherein the composition is a mixture containing manganese, molybdenum and silicon, at least a portion of the latter being present as molybdenum disilicide or tungsten disilicide, molybdenum disilicide being much preferred. The mixture, in powdered form, is suspended in an organic vehicle to provide a slurry which is coated onto the ceramic after which the ceramic is fired in a wet reducing atmosphere to a temperature of about 1,150° to 1,450°C, the organic vehicle vaporizing during the initial phase of the firing operation. By inclusion of the disilicide in the mixture an improved metalized surface on the ceramic can be accomplished using relatively a low firing temperature.

3,801,364

METHOD FOR MAKING PRINTED CIRCUITS WHICH INCLUDE PRINTED RESISTORS

Kunio Kojima; Kazuyuki Shimada, and Mitsuo Wada, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 21, 1972, Ser. No. 219,667
Claims priority, application Japan, Feb. 3, 1971, 46-4399; Feb. 9, 1971, 46-5754
Int. Cl. C23c 17/00; B44d 1/18
U.S. Cl. 117—212 9 Claims



A method for making printed circuits which include printed resistors. A conductive paste is provided which has noble metal particles in flake form and metal particles in dendrite form dispersed in a thermosetting resin. This paste is applied to an insulating base in a desired circuit pattern and cured to adhere the conductive paste tightly to the insulating base and form a conductive film in the desired circuit pattern. A resistor paste is applied in a desired pattern to the insulating base so that the resistor paste connects at both ends of the pattern to parts of the conductive film, and the resistor paste is cured to cause it to adhere tightly to said insulating base and form a resistor film. The resistor film is covered by an insulating film, and the insulating base with the films thereon is immersed in an electroless metal deposition bath for electrolessly depositing metal only on exposed portions of the conductive film.

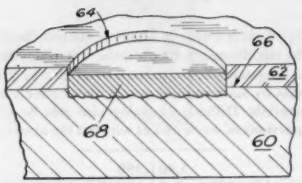
3,801,365

METHOD FOR PRODUCING AN ELECTRICAL DEVICE

Bohuslav A. Hrzek, Troy, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 5, 1971, Ser. No. 169,253
Int. Cl. C23c 11/08
U.S. Cl. 117—212 26 Claims

A conductive layer is deposited on the surface of a reactive electrically resistive material, such as a silicon semiconductor, by contacting the surface with a gaseous mixture of a hydrogen-reducible metal halide, such as molybdenum pentachloride, and hydrogen in an amount which is insufficient for the complete reduction of the metal halide. The surface of the material is heated during the deposition to a reaction temperature which is below the temperature required for the hydrogen reduction of the metal halide to the respective metal but high enough to permit the formation of the metal reaction product of the reactive electrically resistive material. The method is selective, resulting in the deposition of the conductive layer on the reactive electrically resistive surface, but not on any non-reactive insulator or semiconductor layer which may be contained thereon.



Also semiconductor devices, such as a silicon chip having various doped regions forming circuit elements, and an insulating layer thereon. For example, in an aperture in the insulating layer, opposite and in ohmic contact with a doped region, is provided an electrically conductive layer of molybdenum silicides. Thereover and in contact with the conductive layer may be a layer of a semiconductor memory material, forming an electrical switch.

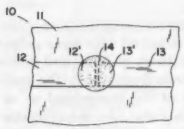
Also compact, complex circuitry employing the novel ohmic conductive layer.

3,801,366

METHOD OF MAKING AN ELECTRICAL CIRCUIT

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Filed Feb. 16, 1971, Ser. No. 115,208
Int. Cl. B44d 1/18
U.S. Cl. 117—212 10 Claims



A method of fabricating electrical circuits by converting circuit material to non-conducting and semi-conducting compounds to vary the conductivity of the circuit material. In one form, a metal film is selectively converted to the metal oxide or a semi-conducting compound of the metal at selected portions thereof to form circuit elements connected by non-converted portions or to separate selected strip portions of the metal film from each other. In another form, polyconducting material is formed in situ on a substrate by chemical action converting a selected portion of a conducting strip to a polyconducting compound.

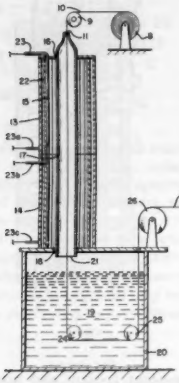
In the metal film conversion step, an oxidizing chemical is provided above a substrate or metal film and heat is selectively applied to a selected area or areas of the metal so as to create a chemical reaction between the metal and chemical at the temperature generated by the beam without substantially affecting and chemically converting other areas of the film. The same radiation, which may be generated as a beam, may also be used to erode portions of the metal film or deposite material onto selected areas of the substrate.

3,801,367

COATED WIRE AND METHOD

G. Richard Blair, Culver City, and Michael R. Elam, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 30, 1972, Ser. No. 303,153
Int. Cl. B44d *1/42*
U.S. Cl. 117—231 3 Claims



This invention is directed to a method of coating copper with a flexible borate glaze and the product obtained thereby.

3,801,368

PROCESS OF ELECTROLESS PLATING AND ARTICLE MADE THEREBY

Takeo Fusayama; Kenji Hayashi; Yoshio Asamizu; Meitaro Endo, and Yasuo Shinohara, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 23, 1971, Ser. No. 201,538
Claims priority, application Japan, Nov. 25, 1970, 45-113308; Dec. 24, 1970, 45-116792
Int. Cl. C23c *15/00*
U.S. Cl. 117—239 5 Claims

An electroless plating method is provided in which palladium or gold is deposited on a substrate in vacuo and thereafter the substrate is electrolessly plated using the previously deposited palladium or gold as the catalyst.

3,801,369

METHOD FOR REMOVAL OF LITHOGRAPHY FROM CONTAINERS

Joseph J. Gregory, 1929 Stratford, Westchester, Ill., and Jack R. Randolph, Box 148, Bismarck, Ill.

Filed Oct. 31, 1972, Ser. No. 302,495
Int. Cl. B08b *1/02, 7/04*
U.S. Cl. 134—6 10 Claims

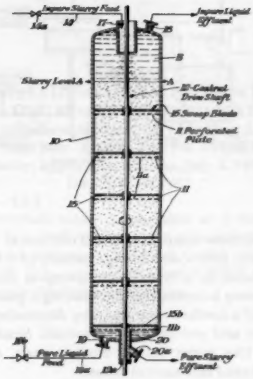
The applied finish or lithography of cylindrical containers such as aerosol type containers is removed by passing the container through a zone of intense heat and then immediately into a second zone where the cylindrical surface of the container is brushed while hot and while the lithography is soft. A plurality of containers are preferably urged seriatim along a linear path through an induction heating coil and are then engaged by one or more wire brushes which rotate the container during the brushing operation. The process may be carried out rapidly and automatically without damage to the soldered seam or metallurgy of the container.

3,801,370

SINK-FLOAT LIQUID CONTACTING OF SOLIDS

Harold Felton Porter, Hockessin; Foster Wilson Rennie, Wilmington, both of Del., and Addison Heaton Williamson, Beaumont, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1971, Ser. No. 197,445
Int. Cl. B01d *11/02*
U.S. Cl. 134—25 R 1 Claim



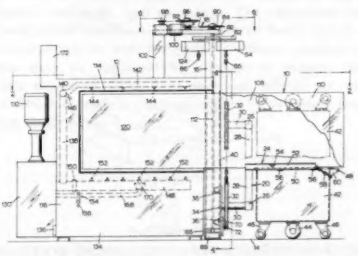
A method and apparatus for contacting two miscible liquids with solids using the sink-float technique wherein there is obtained substantial transfer of the solids from one of the liquids to the other liquid.

3,801,371

INDUSTRIAL WASHING MACHINE

Eugene G. Martin, Ephrata, Pa., assignor to Victor Q. Weaver Inc., New Holland, Pa.

Filed July 25, 1972, Ser. No. 274,978
Int. Cl. B08b *3/02, 9/18*
U.S. Cl. 134—99 20 Claims



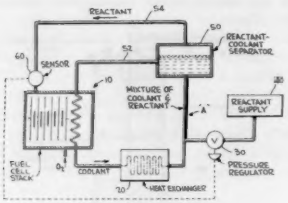
A washing machine adapted particularly to receive and wash relatively large containers such as vats and similar structures having an open top and in which different types of material may be contained for transportation or processing, after which the container is to be thoroughly cleansed before the next use. The machine receives and supports the container to be cleansed in upright condition; inverts it; moves it to a washing compartment for spray-type cleansing with detergent solution, followed by rinsing; and then discharges the cleansed container. Duplicate mechanisms are provided to permit loading and unloading one with a container while the other supports a second container in the washing compartment.

3,801,372

FUEL CELL SYSTEM COMPRISING SEPARATE COOLANT LOOP AND SENSING MEANS

Robert H. Shaw, Ellington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,653
Int. Cl. H01m 27/00, 27/14
U.S. Cl. 136—86 B 4 Claims



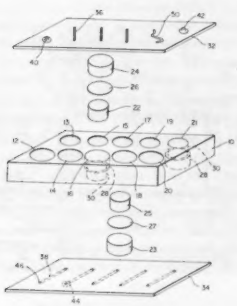
A fuel cell system comprising a fuel cell stack, a pressurized reactant supply, and a circulating coolant, in which the coolant is circulated by a hydrostatic pump is described. The hydrostatic pump is created by introducing a gaseous reactant into one leg of a coolant loop, thereby decreasing the density of the coolant and providing a hydrostatic head to circulate the coolant. The pump has no moving parts, eliminating a source of potential mechanical failure.

3,801,373

MINIATURE DRY CELL BATTERY

Patrick J. Spellman, Box 8109, Middletown, Wis.

Filed Apr. 17, 1972, Ser. No. 244,395
Int. Cl. H01m 2/100
U.S. Cl. 136—109 8 Claims



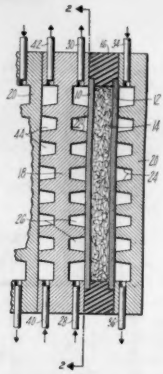
A dry cell battery construction suitable for providing multi-cell voltages in extremely small size is described. The construction uses a multi-cell container body to which are permanently fastened a cover member and a bottom member. Cell elements placed in each individual compartment are interconnected by connector means formed as a part of the cover and bottom members. The container body, cover and bottom together form the individual cell containers and no other cell containers are used in the assembly. Means for providing intermediate voltage taps may be included as a part of the construction.

3,801,374

GRAPHITE AND VINYLIDENE FLUORIDE STRUCTURES FOR FUEL CELLS

George H. Dews, Glastonbury, and Raymond W. Vine, Bolton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 8, 1969, Ser. No. 789,777
Int. Cl. H01m 13/02
U.S. Cl. 136—120 FC 2 Claims



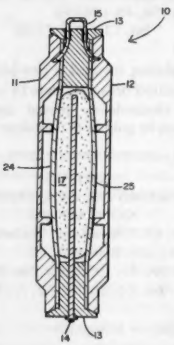
A corrosion resistant coolant and support plate molded from graphite powder and vinylidene fluoride is disclosed for use in acid electrolyte fuel cells. A limited amount of vinylidene fluoride is used to obtain the structural characteristics so that thermal and electrical conductivity may be maintained at a satisfactory level.

3,801,375

ASSEMBLYING ELECTRODES IN ELECTROCHEMICAL CELLS

Arthur M. Jaggard, Apple Valley, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Feb. 25, 1972, Ser. No. 229,274
Int. Cl. H01m 5/00
U.S. Cl. 136—135 R 17 Claims



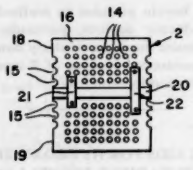
A process for forming electrode leads through a cell housing by inserting of a unitary cathode pin through the housing so that the cathode pin simultaneously functions as a low resistance electrical contact with a collector screen and as an external cell terminal. Another process of the invention is the inserting of a unitary anode pin through the cell housing so that the anode pin simultaneously functions as an external cell terminal and an internal current collector.

3,801,376

AUXILIARY ELECTROLYTE SYSTEM

Olle B. Lindstrom, Taby, Sweden, assignor to Svenska Utrecklingsaktibolaget, Stockholm, Sweden

Filed Aug. 16, 1971, Ser. No. 172,098
Int. Cl. H01m 1/00
U.S. Cl. 136—160 10 Claims



An auxiliary electrolyte system for an electrical current battery such as metal air batteries, fuel cells, lead, alkali and other similar batteries having liquid electrolytes. The electrolyte is circulated through the battery with the help of a pump which has its input connected to a reservoir and the electrolyte expelled from the battery is returned to the electrolyte reservoir mainly by gravity flow. The container for the outside electrolyte also serves as a container or housing for the battery cells or electrode piles which may be either above the upper surface of the electrolyte or partially submerged.

3,801,377

THERMOCOUPLE ASSEMBLY HAVING A FATIGUE RESISTANT LEAD WIRE CONFIGURATION

Howell K. Brewer, 1921 N. Longview, Dayton, Ohio, and Oral S. McCown, 227 N. Shoffer St., Springfield, Ohio

Filed Apr. 16, 1973, Ser. No. 351,669
Int. Cl. H01v 1/04
U.S. Cl. 136—233 1 Claim

High fatigue life thermocouples for use in dynamic stress situations are realized by incorporating the thermocouple components into a thin cylindrical rubber housing. The thermocouple sensor junction is embedded in one end of the housing and its lead wires are wound through a helical groove moulded along the housing's peripheral surface. A rubber sheath covers the assembly and restrains the lead wires in place.

ERRATUM

For Class 147—31 see:
Patent No. 3,801,381

3,801,378

NIOBIUM-GALLIUM SUPERCONDUCTOR

George Wendell Webb, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,000
Int. Cl. C22c 27/00; H01f 1/04
U.S. Cl. 148—3 4 Claims

A superconducting alloy having a T_c of $\geq 20°K$ consists of a β-W alloy of Nb and Ga having the molar formula Nb_3Ga. The alloy can be formed by annealing a β-W phase Nb-Ga alloy at 700°C.

3,801,379

HOT WATER SURFACE TREATMENT OF ALUMINUM SUBSTRATE

Jennings P. Blackwell, Bartlesville, Okla., assignor to Philips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1972, Ser. No. 218,582
Int. Cl. C23f 7/06
U.S. Cl. 148—6.27 11 Claims

An aluminum substrate is rendered more adherent to powder coatings of poly(arylene sulfide) by contacting said substrate with hot water followed by heating said substrate.

3,801,380

RECRYSTALLIZING ANNEALING PROCESS FOR TREATING SEMIFINISHED BRASS STOCK

Peter Ebner, Schiefersteinstrasse 20, Leonding, Austria

Filed Mar. 2, 1973, Ser. No. 337,687
Claims priority, application Austria, July 3, 1972, 5679/72
Int. Cl. C22f 1/02
U.S. Cl. 148—13.2 4 Claims

The semifinished stock is annealed at a temperature of 350°-600°C in a hydrogen-nitrogen atmosphere which consists of 3–99.5% hydrogen, less than 0.08% carbon dioxide, less than 0.01% water vapour, less than 0.001% oxygen, up to 5% carbon monoxide, balance nitrogen.

3,801,381

COMPOSITE NITRIDED ARTICLES

Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, both of Ill., assignors to Surface Technology Corporation, Stone Park, Ill.

Division of Ser. No. 16,594, March 4, 1970, Pat. No. 3,674,573, which is a continuation-in-part of Ser. No. 755,662, Aug. 27, 1968, Pat. No. 3,549,429. This application Mar. 20, 1972, Ser. No. 236,187
Int. Cl. C22c 27/00, 29/00; C23c 11/14
U.S. Cl. 148—31.5 5 Claims

Graded nitrided articles, surface modified in alloy composition wherein the surface zone consists of nitrided alloys consisting essentially of (a) one or more metals of the group columbium, tantalum, and vanadium; (b) zirconium and Zirconium-titanium mixtures, and (c) one or both metals of the group molybdenum and tungsten. A minor portion of the nitrogen may be replaced by oxygen or boron. Nitrided materials prepared from homogeneous alloys are also included. The materials are characterized by excellent wear and abrasion resistance.

3,801,382

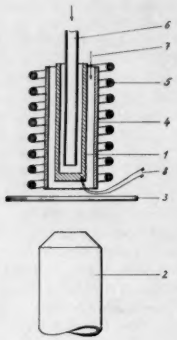
METHOD OF PRECIPITATION HARDENING OF COPPER-ALUMINUM ALLOYS

Ludwig Ettenreich, Wien, Austria, assignor to Elin-Union A.G. fur elektrische Industrie, Wien, Austria

Continuation-in-part of Ser. No. 800,995, Feb. 20, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,055
Claims priority, application Austria, Feb. 27, 1968, 1854/68
Int. Cl. C22f 1/04
U.S. Cl. 148—159 11 Claims

A method of precipitation hardening of Cu-Al alloys, which comprises the steps of subjecting the alloys to the action of one or more electromagnetic alternating fields whose frequency is of a defined value and simultaneously applying heat to the alloys in a single temperature zone which is lower than the eutectoid temperature of the alloys, and finally quenching the

alloys to ambient temperature by an aqueous coolant. The entire process takes place at a much faster rate, and the structure



of the resulting alloy has a finer grain and greater resistance to corrosion than that obtained by conventional precipitation hardening.

3,801,383

METHOD FOR ALIGNMENT OF DIFFUSION MASKS FOR SEMICONDUCTORS

Eiichi Yamada; Yasunobu Kosa, and Eiichiro Sato, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1972, Ser. No. 221,014
Claims priority, application Japan, Jan. 29, 1971, 46-2825
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 **16 Claims**

A method for manufacturing semiconductor devices which comprises the steps of, forming a first opening in an insulating film formed on a major surface of a silicon semiconductor substrate, forming a diffused region in the substrate by locally diffusing an impurity through the first opening in a non-oxidizing atmosphere, forming in the insulating film a second opening larger than the first opening and containing the first opening site by using the confines of the first opening as a positioning reference, forming a new insulating film covering the entire exposed surface of the substrate, and forming a third opening which is contained within the confines of the second opening by using the confines of the second opening as a positioning reference. In another example of the invention, after the formation of the second opening an exposed portion of the substrate surface is etched shallowly to form a hollow, the insulating film is entirely removed from the substrate surface, an insulating film covering the entire surface of the substrate is again provided, and then a third opening is formed in the last mentioned insulating film by using the step on the substrate surface as a positioning reference.

3,801,384

FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 134,251, April 15, 1971, Pat. No. 3,728,785. This application Dec. 8, 1972, Ser. No. 313,206
Int. Cl. H01l *7/34*
U.S. Cl. 148—188 **5 Claims**

The disclosure herein pertains to methods for fabricating discrete semiconductor devices, particularly light-emitting diodes. The disclosure more particularly concerns a diffusion process to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,801,385

PROCESSING AIDS FOR HYDROXY-TERMINATED POLYBUTADIENE PROPELLANT(U)

Edmund J. Mastrolia, Sacramento, and Harry Michigian, Carmichael, both of Calif., assignors to Aerojet General Corporation, El Monte, Calif.

Filed Aug. 19, 1970, Ser. No. 76,343
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **4 Claims**

This patent describes a novel solid propellant formulation containing a hydroxy-containing polybutadiene polymer, a solid oxidizing agent and having a high solids content; the improvement wherein the propellant has an increased pot life and reduced viscosity by the incorporation therein of a small effective amount of a compound selected from the group consisting of those having the generic formula:

$$R'-\underset{\displaystyle R}{\overset{|}{N}}-R',$$

wherein R is hydrogen, ω-hydroxy alkyl, phenyl, cyclohexyl,

$$-C-C\equiv N \text{ and } -O-\overset{\displaystyle O}{\overset{\|}{C}}-\left(CH_2\right)_n-CH=CH-R'',$$

R′ is an ω-hydroxy alkyl or hydroxyphenyl, R″ is alkyl, and *n* is an integer from 1 to about 20; or

$$\left(R'''-O-\overset{\displaystyle O}{\overset{\|}{C}}-\left(CH_2\right)_m\right)_2 S-,$$

wherein R‴ is an alkyl or aryl group and *m* is an integer from 1 to about 20. This invention also includes the method of forming said formulation, and casting and curing the same to form a solid propellant.

3,801,386

FUEL FOR MAGNETOHYDRODYNAMIC GENERATOR

Rainer Zeller, Munich, Germany, assignor to Maschinenfabrik Augsberg-Nurnberg Aktiengesellschaft, Munchen, Germany

Continuation-in-part of Ser. No. 177,876, Sept. 3, 1971. This application Sept. 25, 1972, Ser. No. 291,667
Claims priority, application Germany, Sept. 24, 1971, 2147761
Int. Cl. C06b *15/00*
U.S. Cl. 149—22 **10 Claims**

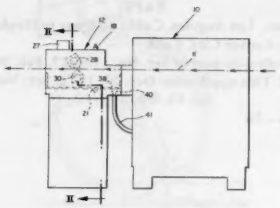
A fuel for a magnetohydrodynamic generator in which readily ionizable seed material additives of potassium compounds, and if desired performance boosting metallic additives, are suspended in a carrier liquid such as kerosene, benzene, toluene or like fuel carrier hydrocarbons, said seed material additive being an organo-metallic compound, namely $C_8H_{15}O_2K$.

3,801,387

ETCHANT REMOVER APPARATUS AND METHOD

Daniel L. Goffredo, Riverton, N.J., and Conrad Dale Shakley, Spring Mills, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Oct. 18, 1971, Ser. No. 189,895
Int. Cl. B08b 3/02, 7/04
U.S. Cl. 156—2 12 Claims



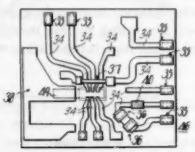
Treated articles such as printed circuit boards that have been etched with an etchant or treated with a solvent, are delivered into a zone of sufficiently high humidity to prevent drying of a liquid treatment fluid on the articles, and wherein the treatment fluid is "blown off" the articles by pressurized air, in the high humidity environment, with the treatment fluid then being delivered for re-use at a prior station.

3,801,388

PRINTED CIRCUIT BOARD CROSSOVER AND METHOD FOR MANUFACTURING THE SAME

Katsuhiko Akiyama, Atsugi, and Yuji Kajiyama, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,909
Claims priority, application Japan, Sept. 30, 1971, 47-76443
Int. Cl. H05k 3/06
U.S. Cl. 156—3 4 Claims



A printed circuit board which has an insulating base plate, a plurality of conductors spearately formed on the insulating base plate, conductive studs formed on the ends of two of the conductors, and cross-over conductor connected to the conductive studs but electrically isolated from one of a plurality of conductors passing between the ends of the two conductors. The cross-over conductor is shaped to have a configuration such that its end portions are wider than its mid portion. The material forming the studs are selected different from the material forming all of the conductors so that they are not removed by the same etchant.

3,801,389

PHOTOELECTRICALLY CONVERTING OPTICAL FIBER AND METHOD OF MAKING THE LIKE

Ikuo Fujimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 13, 1971, Ser. No. 207,235
Claims priority, application Japan, Dec. 26, 1970, 45-118986
Int. Cl. B23p 15/00
U.S. Cl. 156—6 7 Claims

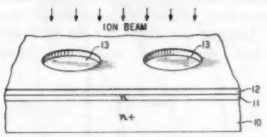
The peripheral surface of a portion of an optical fiber is roughed and thereon a photoelectrically converting element is provided, so that light transmitted in the optical fiber is converted into electric signals by the photoelectrically converting element. Such a photoelectrically converting optical fiber is made by taking a model or a replica of an optical fiber, forming a photoelectrically converting element on the replica, roughing the peripheral surface of the portion of the optical fiber from which the replica is taken, and interlocking again the replica to the optical fiber so as to transfer the photoelectrically converting element onto the roughed surface portion. Furthermore, electrically conductive coating is provided on the other portion of the optical fiber except for the roughed surface portion so as to provide a terminal, and also lead wire, for the photoelectrically converting element.

3,801,390

PREPARATION OF HIGH RESOLUTION SHADOW MASKS

Martin Paul Lepselter, Bethlehem, Pa., and Alfred Urquhart MacRae, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 101,592, Dec. 28, 1970, Pat. No. 3,713,922. This application Sept. 25, 1972, Ser. No. 291,940
Int. Cl. H01l 7/50
U.S. Cl. 156—8 8 Claims

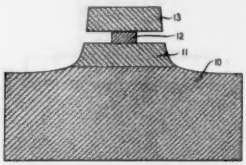


The specification describes a method for preparing a thin silicon high resolution shadow mask, the latter adapted especially for use in processing materials by ion implantation. The method makes use of the preferential etch technique for silicon in which, for example, n+ material can be electrolytically removed in preference to higher resistivity *n*-type silicon. A thin (e.g. $< 10\mu$) epitaxial layer of n-silicon is deposited on an n+ substrate. The open regions of the mask are then converted, through the thickness of the epitaxial layer, to n+ material. After exposure to the preferential electrolytic etch treatment, a thin silicon shadow mask is left. Also disclosed are ribbed structures for enhancing the physical durability of the mask and techniques using crystallographic etching for further improving resolution.

3,801,391
METHOD FOR SELECTIVELY ETCHING $AL_xGA_{1-x}AS$ MULTIPLIER STRUCTURES

John Cameron Dyment, Chatham; Ralph Andre Logan, Morristown, and Bertram Schwartz, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 25, 1972, Ser. No. 291,941
Int. Cl. C23f 1/02
U.S. Cl. 156—16 9 Claims

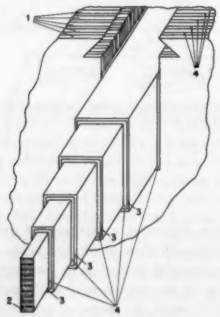


A method for selectively etching a layer of $Al_xGa_{1-x}As$ with a low concentration of Al in a multilayer structure while leaving adjacent layers of $Al_xGa_{1-x}As$ material of higher concentration Al relatively unaffected. The structure is immersed in an etchant consisting essentially of an H_2O_2 solution neutralized to a pH of 6–8 with a suitable hydroxide such as NH_4OH. Preferably, the solution is agitated to insure that the etched surfaces are smooth. This selective etching technique may be used to form a variety of structures including a passive optical waveguide of extremely small dimensions.

3,801,392
METHOD FOR INSULATING ELECTRICAL CONDUCTOR COMPONENTS OF AN ELECTRICAL APPARATUS UTILIZING MICA TAPE IMPREGNATED WITH A HARDENABLE SYNTHETIC RESIN

Joachim Scheel, Viernheim, and Horst Pauler, Weinheim, both of Germany, assignors to Aktiengesellschaft, Brown, Boveri & Cie., Baden, Switzerland

Filed Jan. 25, 1972, Ser. No. 220,633
Claims priority, application Germany, Feb. 16, 1971, 2107332
Int. Cl. H01b 7/02
U.S. Cl. 156—51 7 Claims

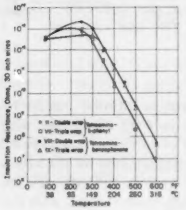


A mica tape insulated electrical conductor is applied to a laminated magnetic flux carrying structure of an electric machine or other apparatus, e.g., the stator structure of a generator and is then impregnated under a vacuum with a hardenable synthetic resin which is thereafter hardened by application of heat. In order to avoid the possibility of resin leakage at a phase in the overall hardening process during which the resin passes through a thinly liquid intermediate phase before gelling sets in a thickener, e.g., colloidal silica is added. The thickener may be applied in various modes such as between the layers of mica tape on the conductor, or only under the outermost layer of tape, or between the individual laminations of the laminated structure, or between the insulated conductor and the laminations.

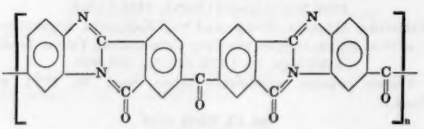
3,801,393
MAKING AN INSULATED CABLE WITH POLYIMIDE TAPE

Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 113,927, Feb. 9, 1971, abandoned. This application Oct. 20, 1972, Ser. No. 300,557
Int. Cl. H01b 13/10
U.S. Cl. 156—56 2 Claims



The invention concerns electrical wire which has been wrapped with insulating tape using as a sealant a compound of the following chemical formula:



I

where n is greater than one. The polymer is the reaction product of 3,3',4,4'-tetraaminobenzophenone and a 3,3',4,4'-tetraester of benzophenone tetracarboxylic acid. Wire which has been wrapped according to this invention has improved electrical properties and high temperature stability.

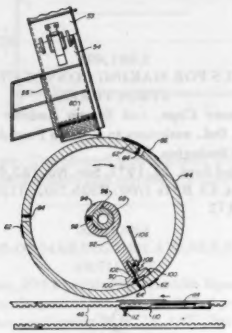
3,801,394
METHOD FOR APPLYING COUPONS TO CARTON BLANKS

John D. Alexander, and Leonard Adams, Jr., both of Louisville, Ky., assignors to The Finn Industries, Inc., Chicago, Ill.

Division of Ser. No. 34,253, May 4, 1970, Pat. No. 3,711,358. This application Jan. 10, 1972, Ser. No. 216,425
Int. Cl. B32b 31/20, 31/04
U.S. Cl. 156—70 4 Claims

A method for applying coupons to paperboard cartons by delivering the coupons one at a time from a supply station onto a moving drum surface, holding the coupons thereagainst with reduced pressures within the drum, interrupting the holding effect of the reduced pressure at a remote transfer station,

blowing the coupons off the cylindrical surface at the transfer station, inducing movement of the coupon to the paperboard



carton blank by differential pressures on opposite sides of the carton, and covering the coupon at a mounting station with oversized covering material.

3,801,395

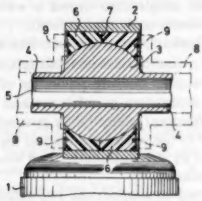
BALL JOINT FRICTION WELDING METHOD

Klaus Stuck, 4005 Buderick Dorfstabe 29, Buderich, Germany

Division of Ser. No. 74,324, Sept. 22, 1970, Pat. No. 3,695,650. This application Dec. 29, 1971, Ser. No. 213,575

Int. Cl. B29c *27/08*

U.S. Cl. 156—73 **1 Claim**



A ball joint having a ball element surrounded by a pair of ball cups of plastic material which are friction welded along the equator of the ball element and having a sleeve surrounding the ball cups.

3,801,396

METHOD OF MAKING A COMPOSITE PANEL

Jan Steenhoudt, Dworp, Belgium, assignor to N. V. Bekaert, S.A., Zwevegem, Belgium

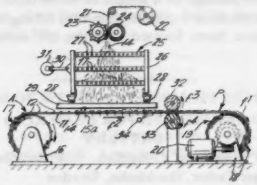
Filed Sept. 15, 1969, Ser. No. 857,871

Claims priority, application France, Sept. 17, 1968, 68.166430

Int. Cl. B29j *5/00*

U.S. Cl. 156—62.2 **4 Claims**

A composite panel consisting of a network or mesh body having applied thereto a covering or wrapping formed of cut pieces of fibrous material which have been spread or scattered upon the network and the material compressed upon the net-



work such that pieces of the fibrous material lie over and under the network and between meshes.

3,801,397

PROCESSING OF LAMINATED TRANSPARENT PANELS

Barrie Casserley, Alcester, England, assignor to Triplex Safety Glass Company Limited, London, England

Filed Jan. 23, 1970, Ser. No. 5,362

Claims priority, application Great Britain, Jan. 24, 1969, 4102/69

Int. Cl. B32b *17/00*

U.S. Cl. 156—99 **2 Claims**

Laminated transparent panels are normally made by assembling sheets of rigid transparent material, at least one of which is glass, with intervening layers of transparent plastics material which bond the rigid sheets together when the assembly is heated. If the panel is cooled too quickly after the bonding process, as by being plunged into cold water, the glass tends to break. If the panel is cooled too slowly, however, crystallites tend to form in the bonding material thus reducing the transparency of the panel. The invention aims to avoid these difficulties by cooling the heated panels at intermediate rates, a liquid with a thermal conductivity less than that of water being applied to the panel. The liquid may have a thermal conductivity of between 2.0 and 4.0 joule cm/cm² sec. °C, and a temperature between 15°C and 35°C.

3,801,398

METHOD AND APPARATUS FOR MANUFACTURING TIRE INNER TUBES WITH AIR VALVES, AND TIRE INNER TUBES WITH AIR VALVE MANUFACTURED BY APPLICATION OF THE METHOD

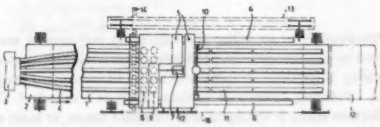
Leonardus Jacovus Piersma, Ede, and Albertus Frederikus Siemes, Doetinchem, both of Netherlands, assignors to N.V. Rubberfabriek Vraderstein, The Hague, Netherlands

Filed Oct. 13, 1971, Ser. No. 188,842

Claims priority, application Netherlands, Oct. 14, 1970, 7015092

Int. Cl. B29h *15/00*

U.S. Cl. 156—120 **11 Claims**



This invention relates to tire inner tubes, to a mechanised and simplified method, and to an apparatus for manufacturing tire inner tubes with air valves in which a conveyor carries tubing portions of an extruded tubing of rubber or the like along apparatuses for forming holes in the tubing portions and for positioning and securing air valves over the holes, the speed

and relative movements of the conveyor and apparatuses being adjusted and controlled such that the apparatuses execute their operations within the length of time that expires between each passage of a length of inner tube, and in which the tubing portions are cut off from said tubing before or after the holes have been formed and the air valves have been secured.

3,801,399

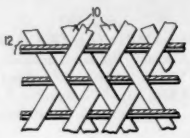
METHOD AND SHEATH FOR LEAD-ACID STORAGE BATTERY

Erik Gustav Sundberg, Osbacken, Nol, Sweden, assignor to Aktiegolaget Tudor, Stockholm, Sweden

Division of Ser. No. 28,436, April 14, 1970, Pat. No. 3,694,265. This application Apr. 18, 1972, Ser. No. 245,287

Int. Cl. D03d *1/00*

U.S. Cl. 156—148 **5 Claims**



Method and sheath for lead-acid storage battery electrode comprising a braid of glass fiber threads bonded by stom threads of substantially untwisted glass fibers and highly twisted thermoplastic fibers. The stem threads of glass fibers provide axial strength sufficient to allow the heat treating of the sheath while under tension either in a stationary or continuous process.

3,801,400

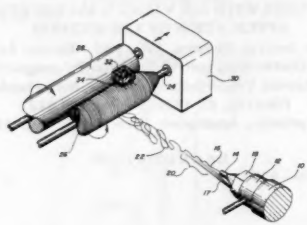
VARYING DENSITY CARTRIDGE FILTERS

Clifford M. Vogt, Madison; John W. Soehngen, Berkeley Heights, and Joseph C. Polise, Morris Plains, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,833

Int. Cl. D04h *3/16*

U.S. Cl. 156—167 **4 Claims**



Polypropylene or other fiber-forming polymer is melt extruded as a continuous molten stream which is attenuated by a plurality of gaseous streams into a fine filament and projected onto a rotating collection surface, such as a mandrel. During collection there is changed, one or more times, at least one of (i) temperature of the filament-forming material, (ii) the speed of extrusion, (iii) the speed of rotation of said collector, (iv) the distance between extruder and collector, or (v) the weight of an idler roll on the collector, thereby to form an annular layer whose density differs relatively from the layer immediately preceding it.

The resulting cylindrical, self-bonded, nonwoven structure has a predetermined, density profile. For uses such as filtration, the fluid to be filtered enters from the low density side so that solids will deposit throughout the filter more or less uniformly rather than building up so much in the first-contacted layer that it becomes fully clogged before the balance has had any appreciable solids build-up.

3,801,401

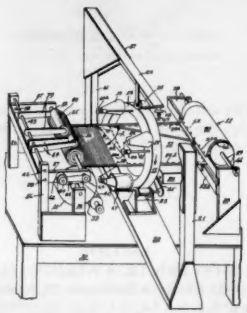
APPARATUS FOR MAKING CONVOLUTE WOUND STRUCTURES

Andrew Passmore Cope, and Steven Andrew Cope, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 24, 1971, Ser. No. 183,590

Int. Cl. B31c *1/00;* **B32b** *5/02, 31/00*

U.S. Cl. 156—172 **8 Claims**



An improved apparatus for assembling a convolute wound structure suitable for use in making an element of a selective permeation separation device comprises

1. a web feeder adapted to unroll a web-like foraminous material in substantially planar form,
2. a takeup adapted to wrap the web-like material around a core to form a convolute wound structure,
3. a wheel structure bearing packages of hollow filament permeation separation membranes and adapted to wrap the hollow filament membranes around the planar web-like material as the wheel rotates and the web-like material is unrolled by the web-feeder and wrapped around the core by the takeup,
4. guides adapted to support the two edges of the web-like material with each edge wrapped not less than about 180° around a guide, and
5. guides for the filaments adapted to cam the filaments to predetermined positions on the web-like material.

3,801,402

METHOD OF PREPARING A COMPOSITE STRUCTURE

Charles A. Suter, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

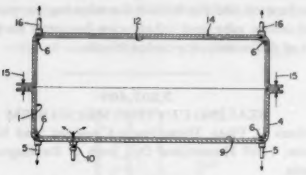
Continuation of Ser. No. 41,072, May 27, 1970, abandoned, which is a continuation of Ser. No. 717,581, April 1, 1968, abandoned. This application Oct. 20, 1971, Ser. No. 191,129

Int. Cl. B29c *17/04;* **B32b** *1/10*

U.S. Cl. 156—182 **8 Claims**

A method of forming a container for holding liquid hydrocarbons. First and second curable polymeric flexible sheets are shaped by reduced fluid pressure against respective concave molds and the sheets, before or after the shaping thereof, are adhesively adhered together through a strip of curable rubber interposed between the sheets of their periphe-

ries. Where the sheets are adhered together prior to forming one of the sheets, a vent is provided through the shaped sheet



to the outside air. The shaped and adhered sheets are cured while the reduced pressure and venting are maintained.

3,801,403
METHOD OF MAKING INFLATABLE SHAPED ARTICLES

William J. Lucek, 275 Fendale St., Franklin Square, N.Y.

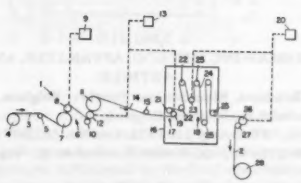
Continuation-in-part of Ser. No. 25,767, April 6, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,448
Int. Cl. B29c *1/00*
U.S. Cl. 156—244 **1 Claim**

Inflatable shaped articles, such as a manikin, chair, or the like, having a skeletal construction of fibrous members limiting outer wall expansion to positions providing the desired shape to the article (i.e., avoiding bulging, distortion and the like), and yet collapsible into a compact condition, convenient for storage and transportation, wherein the fibrous members fill the voids of the skeletal construction.

3,801,404
NOVEL OPEN-CELLED MICROPOROUS FILM

Melvin L. Druin, West Orange; John T. Loft, Springfield, and Steven G. Plovan, Livingston, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 84,712, Oct. 28, 1970, Pat. No. 3,679,538, which is a continuation-in-part of Ser. No. 876,511, Dec. 13, 1969, abandoned. This application July 13, 1972, Ser. No. 271,476
Int. Cl. B32g *3/02*
U.S. Cl. 156—229 **6 Claims**

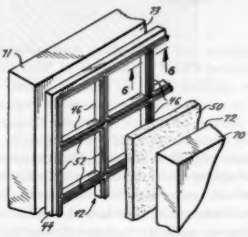


Open-celled microporous polymer films characterized by having a reduced bulk density as compared to the bulk density of the corresponding polymer films having no open-celled structure, a crystallinity of above about 30 percent, a pore size of less than 5000 Angstroms and a nitrogen flux of greater than 35.4, are prepared by the consecutive steps of cold stretching, hot stretching and heat setting a non-porous, crystalline, elastic film.

3,801,405
METHOD OF WELDING THERMOPLASTICS TO PREVENT WARPING

Gregory O'C. Corkery, and Raymond A. Diehl, both of St. Louis, Mo., assignors to Arundale Manufacturers, Inc., St. Louis, Mo.

Filed Mar. 1, 1971, Ser. No. 122,585
Int. Cl. C09j *5/00*; **B32b** *3/24, 5/18*
U.S. Cl. 156—306 **10 Claims**

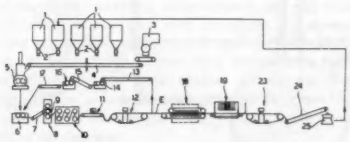


This invention relates to a method of welding a porous flexible sheet material to a thermoplastic frame structure, the sheet material having a melting point above that of the thermoplastic frame such as certain types of synthetic cloths, plastic foam, wire screen and the like. The sheet is made to overlie the frame and a selected portion of the frame surface contacting the sheet material heated to its melting temperature to weld the frame to the sheet. Simultaneously with the application of the weld heat, a balancing heat is applied to a selected portion of the frame creating balancing stresses in the frame members and preventing warping thereof, the balancing heat preferably being less than that required to melt the thermoplastic frame.

3,801,406
METHOD OF FORMING GASKETS

Guglielmo Debenedetti, Turin, Italy, assignor to Insit S.p.A., Turin, Italy

Filed Nov. 3, 1971, Ser. No. 195,359
Claims priority, application Italy, Nov. 11, 1970, 70752/70
Int. Cl. B28b *11/14, 11/16*; **C09j** *5/00*
U.S. Cl. 156—306 **7 Claims**



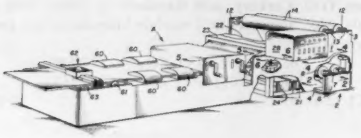
A method for making gaskets by producing a continuous strip of sheet stock either by calendaring or extruding a mixture of basic raw materials. At least one additional layer of material can be bonded to the continuous strip to produce a laminated strip. The continuous or laminated strip is then punched to form blanks having dimensions slightly greater than the dimensions of the desired gasket and vulcanizing the blanks under pressure. Gaskets are then formed from the vulcanized blanks.

3,801,407

APPARATUS AND METHOD FOR PRODUCING PLASTIC REINFORCED SHEET LAMINATES

William B. Goldsworthy, Palos Verdes Estates, and Ethridge E. Hardesty, Pine Valley, both of Calif., assignors to Goldsworthy Engineering, Inc., Los Angeles County, Calif.

Filed Apr. 14, 1972, Ser. No. 244,188
Int. Cl. B29c 25/00
U.S. Cl. 156—380 21 Claims



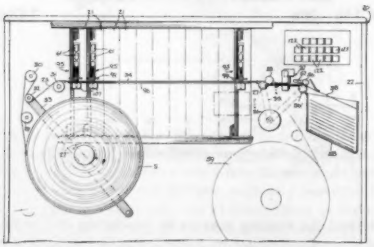
An apparatus and method for producing reinforced plastic sheet laminates where a plurality of fiber containing webs or sheets are passed into a curable resin matrix, facewise disposed on each other in marginal registration, and then cured by means of a pair of radio frequency curing units disposed on opposite sides of the marginally registered sheets. The laminate is pulled through the apparatus by means of a plurality of clamps which reciprocatively shift in timed relationship to the movement of the cured laminate. The apparatus and method is also useful for laminating reinforced fiber containing webs to opposed flat surfaces of a structural member. The fiber containing webs are introduced into a curable resin matrix and are preheated by means of radio frequency during units prior to contact with the surface of the structural member. Shortly thereafter, the webs are fixed in facewise contact with the structural member where the heating proceeds to an ultimate cure, thereby bonding the fibrous sheets to the structural member. A pair of rotating belts are used to move the laminated structure through the curing area and a plurality of clamps which reciprocatively move in timed relation to the laminate are used to move the laminate through the apparatus.

3,801,408

SYSTEM FOR MAKING COLOR-CODED INDEX TABS

Victor M. Kuring, Springfield, N.J.; William R. Smith-Vaniz, Darien, Conn.; Jay L. Carley, Fairfield, Conn.; William P. Shine, Monroe, Conn., and Richard H. Darling, Fairfield, Conn., assignors to Victor M. Kuring, Springfield, N.J.

Filed Feb. 10, 1972, Ser. No. 225,265
Int. Cl. B32b 31/04
U.S. Cl. 156—552 31 Claims



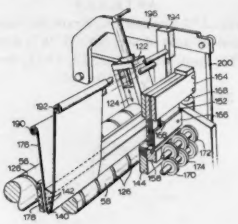
The color-coded index tab is produced automatically by passing a tape through a label applying machine which is programmed by a computer to apply color-coded labels at precise locations of the tape. The tape is afterwards severed to produce the individual index tab for subsequent application to a file holder. The index tabs can be folded or not about the longitudinal center line so that the block of color on each label can be exposed around the edge of the file holder or on a flat edge surface of the file holder for viewing purposes. The individual index tabs and labels can be sized to present any number of different color coded blocks.

3,801,409

SEALING CUTTING MECHANISM

Geerardous G. Plate, Humphreys Crescent, and Nicolaas Van Hattem, 1168 Homewood Dr., both of Burlington, Ontario, Canada

Division of Ser. No. 888,498, Dec. 29, 1969, Pat. No. 3,673,879. This application June 19, 1972, Ser. No. 263,924
Int. Cl. B32b 31/02
U.S. Cl. 156—515 3 Claims



A sealing-cutting mechanism for use in a bag-making machine for manufacturing bags from thermoplastic material of tubular, flexible stock comprising an elongated knife mounted for vertical reciprocal travel into and out of a mating recess, a sealing bar adapted for vertical reciprocal travel onto a support in proximity to said knife and recess, and a mechanical-hydraulic actuating and controlling mechanism operatively connected to said knife and sealing bar.

3,801,410

PHOTOPRINTING ARTICLE

Harry Rodney Detrick, Laceyville, and Roland N. Harshbarger, Ulster, both of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,321
Int. Cl. G03f 7/00
U.S. Cl. 161—1 2 Claims

A photographic master is disclosed wherein the master comprises a base of a transparent sheet, a plurality of upstanding configurations of exposed photographic emulsion material spaced in a predetermined pattern on the base, and a protective coating over the upstanding configurations and base to thereby provide a gas escapement means when the master is used to provide a pattern upon a metallic sheet in a contact printing process. An improved photoprinting process and a method for making the master are also disclosed.

3,801,411

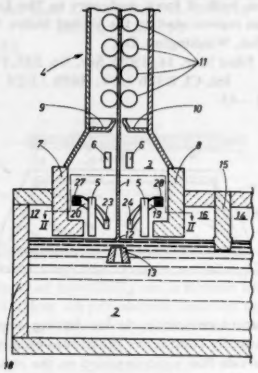
GLASS DRAWING METHOD, APPARATUS, AND GLASS ARTICLE

Claude Brichard, Moustier, sur Sambre, Belgium, assignor to Glaverbel S.A., Brussels, Belgium

Filed Aug. 21, 1972, Ser. No. 282,009
Claims priority, application Luxembourg, Aug. 20, 1971, 63756
Int. Cl. C03b 15/04
U.S. Cl. 161—1 33 Claims

In a glass drawing apparatus in which glass is drawn upwardly through a drawing chamber from a bath of molten glass

to form a glass ribbon and in which the ribbon becomes dimensionally set while traversing a path through the chamber, due at least in part to the action of a cooler located in the chamber adjacent one side of the ribbon, the quality of the glass ribbon is improved, and in particular its tendency to "neck-in" is reduced or eliminated, by withdrawing gas from a



region of the chamber disposed at the same side of the ribbon path as the cooler and located at a greater distance from the ribbon path than is the side of the cooler nearest that path, and by simultaneously discharging gas so as to cause it to flow transverse to the ribbon path in the space between that path and the cooler.

3,801,412

MANUFACTURE OF FLAT GLASS

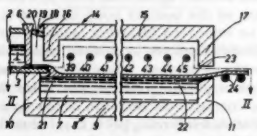
Claude Brichard, Moustier/S/Sambre, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed July 14, 1972, Ser. No. 271,756

Claims priority, application Luxembourg, Oct. 12, 1971, 64049; Great Britain, July 5, 1972, 31484/72

Int. Cl. C03b *1/02*

U.S. Cl. 161—1 **51 Claims**



In the treatment of flat glass in a closed tank while floating on a molten bath in at least one zone of which the glass has a sufficiently low viscosity for the planeity of the upper face of the flat glass to be influenced by the heat distribution in the gaseous atmosphere above the glass, the gases constituting the atmosphere in that zone are subjected to a mixing action to increase their thermal homogeneity and thus to improve the planeity of the glass leaving the tank.

3,801,413

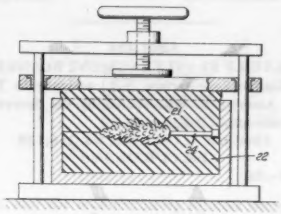
PROCESS FOR PRODUCING ORNAMENTAL FIGURES FOR JEWELRY AND RESULTING ARTICLE

Ramon M. Block, Pacific Palisades, and George J. Fencl, Santa Monica, both of Calif., assignors to Sascha Brastoff Metal Arts Company, Marina Del Rey, Calif.

Filed May 30, 1972, Ser. No. 257,652

Int. Cl. B22d *25/02*

U.S. Cl. 161—21 **14 Claims**



A process and the resulting article of mass producing low cost fanciful ornamental figures for jewelry and jewelled articles and objects of art which involves the use of selected electrolytic "trees" or random metallic deposits made in an electroplating operation as a master in preparing a jeweler's mold, then casting inexpensive metal or plastic material in the mold to produce reproductions of the master.

3,801,414

FLEXIBLE PLASTIC GREENERY SIMULATING MATTING ASSEMBLY

Wesley Seu Cheng Chin, P.O. 8412 Crenshaw Sta., Los Angeles, Calif.

Continuation-in-part of Ser. No. 170,141, Aug. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 57,509, July 23, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,663

Int. Cl. A41g *1/00*

U.S. Cl. 161—21 **23 Claims**

An assembly comprised of a plurality of rectangular molded plastic lattices, the webbing of which receives and supports molded plastic tufts simulating grass or other greenery at regular spaced distances. The tufts are in the shape of inverted domes formed by molding a plurality of plastic strands to radiate from an annular core which may be centrally orificed. The webbing of the lattice is orificed at spaced intervals so that when the tuft orifices are disposed in registry therewith, the tufts may be secured to the webbing by headed plastic studs, the shanks of which are passed through the registering orifices, and the unheaded end of which is heat-sealed on the bottom side of the webbing. Alternatively, the tuft cores may be unorificed and provided with an axially and downwardly projecting peg which, when passed through the webbing orifices may be heat sealed, or may have interlocking radial projections to secure the pegs against withdrawal from the webbing orifices either with or without heat sealing. The tufted assembly in another form may be adapted to form a golf chipping or driving mat.

3,801,415

COLLAPSIBLE MOUNTING OF ARMS, RODS OR BRANCHES ON A CENTRAL SUPPORT

Alfred Jean Fristot, Domaine d'Armont Faramans, Ain, France

Filed Dec. 12, 1972, Ser. No. 314,473

Int. Cl. A47g *33/06*

U.S. Cl. 161—24 **4 Claims**

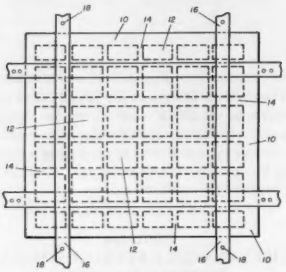
In this artificial tree the central bole comprises substantially rectangular openings off-set both laterally and vertically and

each branch is adapted to engage a corresponding opening by means of a tenon formed integrally therewith and by being force-fitted therethrough. To this eand, each tenon comprises laterally projecting lips or catches adapted to undergo an elastic deformation when said tenon is introduced through the opening, the branch being subsequently retained in their inclined position by engaging with a heel the inner surface of said tubular hole. Internal cam means may be provided in said bole for actuating said tenon and thus fold the branches to an inoperative position alongside the bole. These cams may be carried by a common rod.

3,801,416
FLEXIBLE BLAST FRAGMENT BLANKET

Joseph E. Gulbierz, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1972, Ser. No. 216,120
Int. Cl. B32b *3/10*
U.S. Cl. 161—36 **12 Claims**

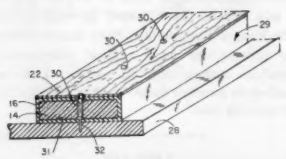


A flexible blast fragment blanket comprising a plurality of layers of flexible blast-resistant material, and a multiplicity of blast-resistant plates embedded between said plurality of layers, said plates having greater blast resistant properties than the material of said plurality of layers, said plates having channels therebetween, said channels imparting a desired flexibility to the blanket.

3,801,417
DECORATIVE MOLDING AND METHOD OF FORMING SAME

Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,434
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—43 **4 Claims**

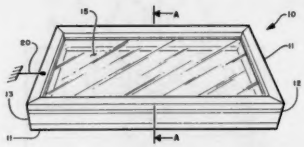


Decorative molding and a method of forming the molding, the method comprising extruding a core of selected configuration from foam plastic, encapsulating the extruded foam plastic core with a theremoplastic sheath of greater rigidity than the rigidity of the foam plastic, and fixedly covering at least a portion of the thermoplastic sheath with a decorative thermoplastic strip having a simulated wood-grain colored appearance. The thermoplastic sheath is extruded with a wall of generally uniform thickness in surrounding relation about the extruded foam plastic core so as to conform in shape with the latter.

3,801,418
TRANSPARENT ANTI-STATIC DEVICE

Clarence C. Cornelis, Fort Madison, and Harry A. Hanna, Burlington, both of Iowa, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 16, 1972, Ser. No. 235,179
Int. Cl. B32b *1/04;* **H05b** *33/28*
U.S. Cl. 161—43 **2 Claims**

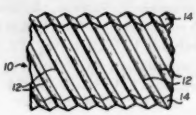


A transparent anti-static device having a generally transparent electrically conductive metal film on a substrate with a silicon monoxide film superimposed on the conductive film to eliminate buildup of static electricity. The coating can be deposited on a transparent substrate such as glass or plastic on, as an example, a window or safety shield, thereby permitting observation through the substrate of a tool or explosive being processed.

3,801,419
CORRUGATED SHEET MEMBER WITH A REINFORCING EDGE EXTENDING LENGTHWISE OF THE CORRUGATIONS

George W. Meek, Fort Myers, Fla., assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Filed July 20, 1971, Ser. No. 164,321
Int. Cl. B32b *3/02, 3/12, 3/06, 3/28, 3/04;* **B01d** *47/00*
U.S. Cl. 161—44 **9 Claims**



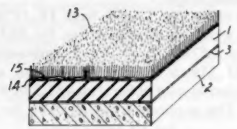
A contact body element for use in forming fill or decking for a gas and liquid contact apparatus, such as a cooling tower; a method for use of the contact body eleme.it in such an apparatus, and an improved fastening member for maintaining the contact body elements in desired assembled operative orientation in the apparatus. The novel fill comprises a thin sheet of fibrous or plastic material. The sheet may be corrugated and the corrugations may run askew to a longitudinal axis of the sheet. A reinforcing ply is secured to the sheet, said ply formed by folding a portion of the sheet over on itself and/or by securing a separate strip to the sheet. The reinforcing ply is positioned along the sheet edge. In use, according to the novel method, these corrugated reinforced sheets have sufficient strength and rigidity, so that they may be shipped in a nested stacked package to a point of desired use, where they are assembled in a cooling tower by arranging the fill sheets to run with the corrugations spacing the sheets to provide for a plurality of spaced fluid flow channels. Fastening means may be provided for maintaining the assembled fill in desired operative orientation. The fasteners comprise an elongate

skewer like member formed of sheet metal with a separable point at one end and tail pieces at the other end subject to being bent out of the plane of the skewer, after the skewer is inserted through the assembled fill sheets.

3,801,420
PLASTIC QUILTED BEDSPREAD
Ann Anderson, 3220 W. Boston No. 203A, Detroit, Mich.
Filed June 3, 1971, Ser. No. 149,515
Int. Cl. B32b *3/06*
U.S. Cl. 161—52 **1 Claim**

A quilted water-proof plastic laminated bedspread which includes a washable vinyl top layer, a resilient padding filler layer, a third layer of interfacing and a bottom lining layer of water repellant nylon, all peripherally secured together by a binding and with a series of transverse continuous quilting stitches throughout the surfaces.

3,801,421
RESILIENT COMPOSITE USEFUL AS SURFACING FOR ATHLETICS
Michael George Allen, Hudson, Wis.; Theodore Buchholtz, Village of Maplewood, and George Van Dyke Tiers, St. Paul, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Nov. 9, 1970, Ser. No. 87,682
Int. Cl. C08g *41/100*; **B32b** *5/16, 27/40*
U.S. Cl. 161—67 **14 Claims**

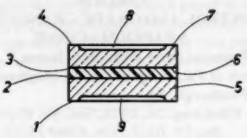


A resilient composite material useful, for example, in the form of a layer as a surfacing or paving for athletic activities, comprising particulate vulcanized rubber bonded with polyisocyanurate resin.

3,801,422
MULTILAYER FIBROUS INSULATING ARTICLE
Helmut Gorlach; Walter Strooi, both of Wuppertal-Elberfeld, and Alois Kreckl, Kelsterbach, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Mar. 1, 1971, Ser. No. 119,847
Claims priority, application Germany, Mar. 6, 1970, 2010598
Int. Cl. B32b *15/00*
U.S. Cl. 161—82 **21 Claims**

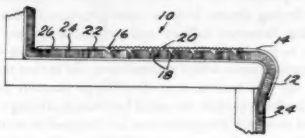
A multilayer web or article of insulating material which essentially includes at least one flame-resistant layer having polyacyloxalamidrazone fibers bearing at least one metal, preferably zinc, tin or calcium, in chemically combined form. These articles or materials are especially suitable in the manufacture of rescue suits, protective clothing and protective linings.

3,801,423
MULTIPLE GLAZING PANEL AND MANUFACTURING METHOD THEREFOR
Robert Van Laethem, Loverval, and Pol Baudin, Ransart, both of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium
Filed June 1, 1971, Ser. No. 148,334
Claims priority, application Great Britain, May 21, 1971, 16283/71
Int. Cl. B32b *3/02, 5/14, 17/10*
U.S. Cl. 161—117 **31 Claims**



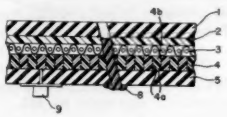
A panel, and the manufacturing process therefor, having two sheets of glass or vitrocrystalline material joined in facing relation, that face of one sheet which constitutes an external face of the panel being chemically tempered to induce compressive stresses therein and being weakened to reduce its resistance to breakage due to flexures of the type which apply tensile forces thereacross.

3,801,424
TACKLESS STAIR CARPET PROTECTOR
Edward S. Robbins, Jr., P.O. Box 2386, Tuscumbia, Ala.
Filed Dec. 8, 1971, Ser. No. 206,024
Int. Cl. B32b *3/00*
U.S. Cl. 161—123 **6 Claims**



A tackless stair nose includes integral riser, nose and step portions, sharpened teeth or the like integral with and depending from the step portion and angles towards the riser portion and a strip of hook type fastening material disposed on the bottom of the step portion opposite the nose. The nose and riser portions produce a springing action which draws the teeth into the carpet when the stair nose or carpet protector is drawn over the carpet of a stair step.

3,801,425
SELF-SEALING CONTAINER
Richard L. Cook, Flagstaff, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Mar. 22, 1971, Ser. No. 126,758
Int. Cl. B32b *27/30, 27/40*
U.S. Cl. 161—190 **10 Claims**



A fuel container which pertains more particularly to lightweight fuel containers such as the gasoline and jet fuel

cells employed in aircraft and which are self-sealing when punctured by missiles, the container comprising an elastomeric laminate having a sealant composition positioned in said laminate to effect sealing on contact with the fuel. The sealant composition is characterized as containing at least one fuel insoluble polymer dispersed in a solvent for said polymer, said solvent being pourable over a range of −65° F. to 300° F. and being miscible with the fuel at a temperature range of −65° F. to 300° F. to effect coagulation or precipitation of the fuel insoluble polymer from said composition.

3,801,426

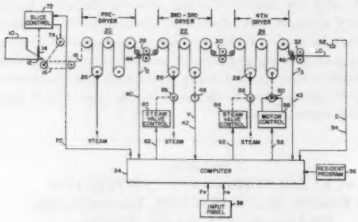
DRYER CONTROL AND GRADE CHANGE SYSTEM FOR A PAPER MACHINE

Richard E. Putman, Penn Hills, and James T. Carleton, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1970, Ser. No. 67,180

Int. Cl. D21f 5/06; G06f 15/46

U.S. Cl. 162—198 **9 Claims**



A computer system for controlling a paper sheet drying machine characterized in that a feed-forward signal is developed proportional to desired steam temperature in the machine drying drums from a consideration of the empirical relationship between caliper and production rate. This same of caliper to production rate is used to predict the production rate at a new caliper while maintaining the steam temperature constant. By this means, a grade change transfer path can be computed which avoids the need to change drying conditions. The speed at which the grade can be changed is merely a function of the mechanical response of the machine and completely divorced from the much longer thermal responses. After the new caliper is established, the steam temperature can be varied leisurely over a period of time to increase the production rate.

3,801,427

PRINTED CIRCUIT PLATE

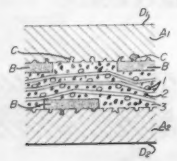
Hirosada Morishita; Ryusei Sasaki; Kiyoshi Sakashita, and Eiji Yasui, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,727

Claims priority, application Japan, Dec. 25, 1970, 45-117626

Int. Cl. B32b 5/16

U.S. Cl. 161—162 **10 Claims**



A printed circuit plate excellent in dimensional stability, heat resistance in soldering and adhesion to printed circuit film and having electric properties not inferior to those of the conventional printed circuit plate can be obtained by compression molding a prepreg comprising glass fibers and a thermosetting resin which is filled with 20–70 percent by weight of inorganic powders mainly composed of SiO_2, $CaCO_3$, Al_2O_3, CaO, CaF_2, etc. and having a diameter of less than 200 μ.

3,801,428

BONDED NON-WOVEN FIBRE FLEECE

Hellmut Striegler; Raoul Resz, and Herbert Bartl, all of c/o Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1971, Ser. No. 183,687

Claims priority, application Germany, Sept. 24, 1970, 2047014

Int. Cl. B32b 27/00

U.S. Cl. 161—169 **2 Claims**

A high bulk bonded non-woven fibre fleece containing natural and/or synthetic fibres and binder fibres, which are adhesive at higher temperatures, said binder fibres consisting of a saponified ethylene-vinyl acetate copolymer, the molar ratio of vinyl acetate to ethylene in said copolymer before saponification being in the range of 1:1 to 1:20. In the process to produce the bonded fleece, the fibres containing 5 to 50 percent by weight of binder fibres are formed to a non-woven fleece and the formed fleece is heated to temperatures of above 110° C, to render adhesive the binder fibres.

3,801,429

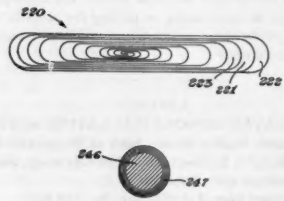
MULTILAYER PLASTIC ARTICLES

Walter J. Schrenk, Bay City; Douglas S. Chisholm, Midland; Kenneth J. Cleereman, Midland, and Turner Alfrey, Jr., Midland, all of Mich., assignors to The Dow-Chemical Company, Midland, Mich.

Division of Ser. No. 72,445, Sept. 15, 1970, Pat. No. 3,647,612, which is a division of Ser. No. 863,729, June 6, 1969, Pat. No. 3,576,707, which is a continuation of Ser. Nos. 445,851, March 29, 1965, abandoned, which is a continuation-in-part of Ser. No. 431,336, Feb. 9, 1965, abandoned. This application Oct. 4, 1971, Ser. No. 192,725

Int. Cl. D02g 3/00

U.S. Cl. 161—181 **1 Claim**



Multiple layer films are made by arranging a minimum of two streams into one stream having a plurality of generally parallel layers. By mechanically manipulating the layered stream an increased number of layers are obtained and the manipulating stream is shaped into a desired configuration having a plurality of layers generally adjacent to a major surface thereof. Under certain conditions, irridescent products are obtained without the use of pigment.

3,801,430

PROCESS FOR MOLDING A FLEXIBLE MOLD

Jack R. Harper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 816,779, April 16, 1969, Pat. No. 3,615,071. This application Oct. 12, 1970, Ser. No. 80,190

Int. Cl. B32b *27/08, 27/38, 27/40*

U.S. Cl. 161—184 5 Claims

A method of forming shaped articles of polyester, polyurethane or epoxy resin by using a flexible mold wherein a thin continuous film of a methyl ethyl ketone soluble copolymer of vinylidene chloride and acrylonitrile is applied to the shape forming surface of the flexible mold prior to molding an article is disclosed. This process provides a shaped article having a thin coating of the copolymer of vinylidene chloride and acrylonitrile on the surface. This process extends the useful life of the mold.

3,801,431

METHOD AND APPARATUS FOR CONTINUOUS PRETREATMENT OF WOODEN CHIPS

Gosta Ingemar Ingemarsson, 9, Dyrkebolsgatan, Karlstad, Sweden

Filed Aug. 27, 1971, Ser. No. 175,433

Claims priority, application Sweden, Aug. 31, 1970, 11826/70

Int. Cl. D21c *3/26, 7/10*

U.S. Cl. 162—19 12 Claims

Wooden chips are heated by a steam heating device in a closed pressure vessel to remove water and air therefrom and are fed to at least one additional heated closed pressure vessel. A portion of the effluent from each pressure vessel is fed to the next vessel to supply heat to that vessel. The condensate-steam mixture from the heating pipe in the first vessel is collected and the steam portion of the condensate-steam mixture is combined with the first vessel's effluent in the heating pipe of the second vessel. This is repeated in all but the last vessel. The steam portion of the condensate-steam mixture in the last vessel is added directly to the interior of the last vessel. Turpentine is recovered from the effluent from the last vessel. The apparatus includes a series of individually enclosed pressure vessels connected in series to one another at the wooden chip outlet of the first and the chip inlet of the next following vessel. All vessels are maintained at different pressures, preferably with the highest pressure in the first vessel and the lowest in the last so that the amount of water removed from the chips in each vessel is equal to that produced in the other vessels.

3,801,432

PROCESS FOR SUBJECTING WOOD CHIPS TO IRRADIATION WITH ELECTRONS

David Free, West Vancouver, British Columbia, Canada, assignor to Radiation Development Co., Ltd., Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 117,722, Feb. 22, 1971, abandoned. This application Feb. 7, 1972, Ser. No. 224,343

Int. Cl. D21c *5/00*

U.S. Cl. 162—50 6 Claims

In the making of pulp from wood, wood is subjected to irradiation with electrons in an amount less than 1.0 megarad but sufficient to modify wood structure such that pulping process is facilitated by energy requirement reduction, and yield and quality of pulp maintained or improved.

3,801,433

METHOD OF CONTROLLING PITCH IN PAPER USING AMINE COATED CLAYS

William Windle, St. Austell, England, assignor to English Clays Lovering Pochin and Company Limited, St. Austell, Cornwall, England

Filed Oct. 12, 1971, Ser. No. 188,469

Claims priority, application Great Britain, Oct. 14, 1970, 48909/70

Int. Cl. D21h *3/78*

U.S. Cl. 162—181 D 7 Claims

In the manufacture of paper, the deposition of pitch is reduced by adding to the pulp from which paper is to be made a quantity of a clay pigment which has been coated with an organic material which adheres strongly to the clay pigment and which renders the surface of the particles of said clay pigment oleophilic.

ERRATUM

For Class 162—198 see:
Patent No. 3,801,426

3,801,434

METHOD IN THE MANUFACTURE OF LIGNOCELLULOSIC FIBREBOARD

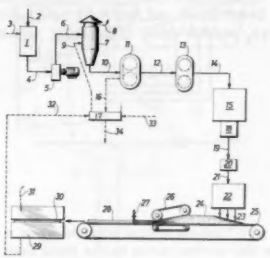
Bengt Johan Carlsson, Kruldurksgatan 2B, Motala, Sweden

Filed Apr. 28, 1971, Ser. No. 138,157

Claims priority, application Sweden, Apr. 29, 1970, 5990/70

Int. Cl. D21j *3/00*

U.S. Cl. 162—201 6 Claims



A semi wet method of manufacturing lignocellulosic fiberboard in which the lignocellulosic material is soften and disintegrated to form a stream of wet pulp. The wet pulp stream is subjected to mechanical pressing to remove liquid water and substantially eliminate variations in the moisture content. The resulting pulp is suspended in a flow of gas and then separated from the said gas flow to form a pulp web.

3,801,435

PAPER MACHINE SAVEALL WITH DE-AERATOR

Alexander Malashenko, Pointe Claire; Gordon Thomas Tidbury, Vaudreuil, and Ralph James Futcher, Beaconsfield, Quebec, all of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Aug. 7, 1972, Ser. No. 278,551

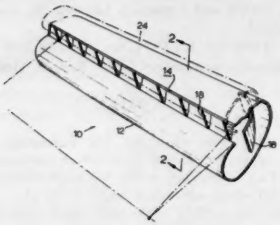
Claims priority, application Canada, Aug. 12, 1971, 120350

Int. Cl. D21f *7/00*

U.S. Cl. 162—202 5 Claims

A jet deflector for use as a saveall in a paper machine having a wide cellular roll discharging water substantially tangentially therefrom as a high speed jet extending the full width of the

machine and projected into a zone of restricted access which deflector has an entry to receive the jet, a plurality of inclined, curved and twisted deflector plates, and an egg shaped flow



section to receive, divert and blend the discrete entering jets into a high velocity transversely flowing stream for passage from the machine.

3,801,436

FIBROUS WEB FORMING MACHINE WITH WHITE WATER RECIRCULATING ARRANGEMENT

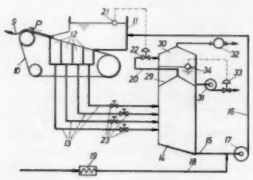
Klaus Prechtel, Heidenheim-Mergelstetten, Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed May 10, 1971, Ser. No. 141,605

Claims priority, application Germany, May 14, 1970, 2023521

Int. Cl. D21f 1/80

U.S. Cl. 162—252 **5 Claims**



A fibrous web forming system wherein white water is recirculated from the suction boxes to the stock inlet. The closed conduit system includes a closed vessel wherein the velocity of the stock is reduced, and from the top of which excess water and entrained gas is drawn off to a degassing chamber from which the water and gas are separately withdrawn. A pump downstream from the closed vessel withdraws water therefrom and supplies it to the stock inlet, while fresh pulp is supplied to the recirculating water at the point in the conduit system between the closed vessel and the suction side of the pump.

3,801,437

HIGH SPEED MULTI-CYLINDER MACHINE FOR MANUFACTURING A MULTI-PLY PAPER

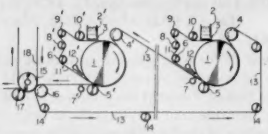
Masateru Tokuno, Nishinomiya, Japan, assignor to Shizuoka-Kogyo Co., Ltd., Shizuoka-ken, Japan

Filed Sept. 22, 1970, Ser. No. 74,302

Int. Cl. D21f 1/00, 1/48, 1/60

U.S. Cl. 162—274 **4 Claims**

High speed multi-cylinder machine for manufacturing a multi-ply paper. Each cylinder unit is provided with a flow box for supplying stock uniformly with a proper water content onto an endless wire screen which wraps around a wire cylinder connected to a source of suction, the stock or the wire screen being pressed by a traveling endless felt which runs at the same speed as the wire cylinder and endless wire screen. The wire screen and felt wrap around the wire cylinder and are carried away therefrom after passage through a nip formed between the wire cylinder and a couch roll disposed



below the wire cylinder. A suction slider is positioned at the outgoing side of the nip between the surface of the wire cylinder and the wire screen to remove water from the wire cylinder.

3,801,438

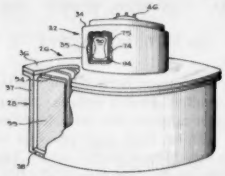
TOROIDAL APPARATUS FOR CONFINING PLASMA

Tihiro Ohkawa, La Jolla, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 3, 1970, Ser. No. 25,308

Int. Cl. G21b 1/00

U.S. Cl. 176—3 SHEET 1 OF 2 **12 Claims**



Toroidal apparatus for confining plasma in which at least three magnetic field producers are provided. One field producer provides a toroidal magnetic field. Another field producer provides a multipolar configuration for the toroidal field. A third field provides rotational transform for the multipolar magnetic field. All of the field producing means are outside of the toroidal confinement region.

3,801,439

DEVICE FOR DETECTING THE OVERHEATING OF FUEL ELEMENTS FOR A NUCLEAR REACTOR

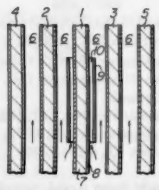
Hidemasa Kato, Sagamihara; Kiyoshi Inour, Tokyo, and Munemaro Imai, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 27, 1970, Ser. No. 84,423

Claims priority, application Japan, Oct. 31, 1969, 44-86859

Int. Cl. G21c 17/02

U.S. Cl. 176—19 R **6 Claims**



A device for detecting the overheating of fuel elements in a nuclear reactor of such a type that liquid coolant is allowed to

flow through space among a number of fuel elements inserted into the core of the reactor, in which a particular fuel element is provided with a cylindrical or planar septum with a slight interstice therebetween. When the particular fuel element is abnormally overheated, the overheating is detected by detecting the filmy boiling of the coolant flowing in the interstice around the particular element which occurs before the filmy boiling of the coolant flowing in the space around the other fuel elements occurs.

3,801,440

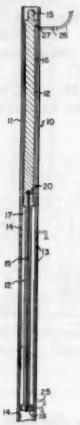
LEAK DETECTION SYSTEM FOR A NUCLEAR REACTOR

Jerome Apt, Jr.; William J. Wachter, and Wesley M. Rohrer, Jr., all of Pittsburgh, Pa., assignors to USC Incorporated, Pittsburgh, Pa.

Filed Nov. 3, 1971, Ser. No. 195,419

Int. Cl. G21c *17/04*

U.S. Cl. 176—19 LD **1 Claim**



An elongated slide valve for detecting fuel leaks in a nuclear reactor has a plurality of sampling ports along one side of a valve body and a plurality of intermittently spaced flush ports along an opposing side of the valve body. A slide member alternately communicates with sampling port and flushing port as it sequentially samples the various fuel subassemblies of the reactor through the sampling ports. A single outlet chamber and throughgoing conduit exits each sample from the nuclear reactor to monitoring equipment. The reactor coolant is employed as the flush between samples and as the seal for the slide member. The slide valve is operated by the control rod drive mechanism.

3,801,441

FAILED NUCLEAR REACTOR FUEL DETECTION APPARATUS

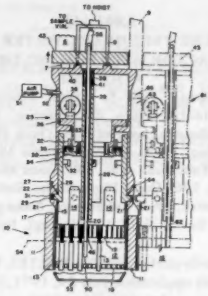
Cecil R. Jones, Hamden, Conn., assignor to Transfer Systems Incorporated, New Haven, Conn.

Filed Oct. 12, 1971, Ser. No. 188,151

Int. Cl. G21c *7/00*

U.S. Cl. 176—19 R **5 Claims**

Apparatus for detecting failed or leaking fuel rods in fuel assemblies in a nuclear reactor for power generation are described. A gripper for the fuel assembly is combined with a sampling tube for sucking up a coolant sample after the temperature of the fuel rods has been increased to a level causing increased emission of radioactive residues from a leaking rod. For the BWR, the gripper couples to the fuel assembly channel while in the reactor core in such manner as to isolate in a substantially air-tight manner the fuel assembly. Then an air bubble is introduced depressing the coolant level causing the



desired temperature increase. For the PWR, the gripper lifts the fuel assembly into an overhead container to isolate same, and then heat is supplied via axuiliary heaters to raise the temperature of the fuel rods. To increase the sensitivity, the coolant sample is taken from below the upper fuel rod support.

3,801,442

MULTIPLE STANDPIPE-CONTROLLED CORE HOLD DOWN MECHANISMS FOR FLUID-COOLED NUCLEAR REACTORS

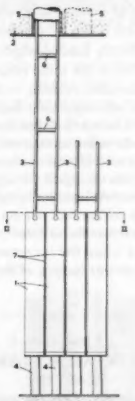
Alexander Walker, and Michael Roger Williams, both of Whetstone, England, assignors to British Nuclear Design & Construction Limited, Whetstone, England

Filed Mar. 24, 1969, Ser. No. 809,640

Claims priority, application Great Britain, Apr. 8, 1968, 16,794/68

Int. Cl. G21c *19/10, 3/30*

U.S. Cl. 176—29 **1 Claim**



In a nuclear reactor core each column 1 is maintained in a located position by an upper and lower support member 3 and 4 respectively, clearances 7 being provided between the columns to cater for bowing thereof under irradiation conditions. The upper member 3 may be released from its column so that said column may be withdrawn from the reactor pressure vessel 2. Groups of columns 1 may have their upper sup-

port members 3 connected to a standpipe closure plug so that when the latter is withdrawn from its standpipe 5 the group of columns 1 is released. Preferably the dimensions of the columns 1 are such that any bowing occurring under irradiation conditions is accommodated by the clearances 7.

3,801,443

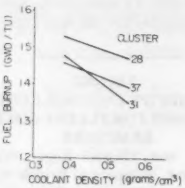
PRESSURE TUBE TYPE HEAVY-WATER MODERATED POWER REACTOR WITH BOILING LIGHT WATER COOLANT

Shigeru Yasukawa, 1267-5, Oaza Muramatsu; Wataru Shinoda, 2116-18, Oaza Muramatsu; Ryuichi Shindo; Yoshihiro Tadokoro, both of 945, Oaza Muramatsu; Toko Seya, 1088 Sugi, Naka-machi; Susumu Mitake, 138, Oaza Muramatsu; Taketoshi Arai, 138, Oaza Muramatsu; Mitsumasa Hirano, 138, Oaza Muramatsu; Sadao Sato, 2116-1, Oaza Muramatsu, all of Tokaimura, Naka-gun, Ibaragi-ken, and Sadamu Sawai, 3-27-4, Shirasagi, Nakano-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 802,113, Feb. 25, 1969, abandoned. This application July 26, 1971, Ser. No. 166,029

Int. Cl. G21c *19/00*

U.S. Cl. 176—30 **3 Claims**



On the first fuel loading, fuel clusters each being composed of fuel elements with slightly enriched uranium dioxide are inserted in the respective pressure tube of a heavy-water moderated reactor with boiling light-water coolant, and on and after the second loading, fuel clusters each being composed of fuel elements of natural uranium dioxide mixed with plutonium dioxide which is the by-product fuel obtained from the spent fuel of the firstly loaded slightly enriched uranium dioxide fuel, are inserted in the same respective pressure tubes of a heavy water moderated reactor with boiling light water coolant, the diameter of respective fuel rods being smaller than that of the firstly loaded fuel and the number of said fuel rod in a cluster being the same as that of the firstly loaded fuel cluster. The core structure of the nuclear reactor, except the fuel cladding tube, is not changed throughout the continuous operation of said reactor. When the number of the fuel rods in the respective clusters of the reactor on and after the second loading is made larger than the number of the first loading fuel rods in the clusters and when the increased number is properly selected, the channel power output of the reactor is increased significantly.

3,801,444

PRESSURE VESSEL IN PARTICULAR FOR A NUCLEAR REACTOR

Wieland Kraemer, Vasteras, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

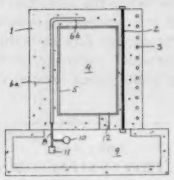
Filed Nov. 19, 1971, Ser. No. 200,460

Claims priority, application Sweden, Dec. 2, 1970, 16340/70

Int. Cl. G21c *13/10*

U.S. Cl. 176—37 **4 Claims**

The invention is concerned with a pressure vessel of prestressed concrete, having an interior steel lining. A plurality of passages are provided in the concrete. If a leak occurs, the leaking pressurized fluid escapes through the porous concrete to said passages. The presence of the pressurized fluid in said passages can be checked by means of pressure gauges. The



passages are preferably arranged as two separate sets of passages, the passages of one set forming an angle with those of the other set, making it possible to locate a leak fairly well.

3,801,445

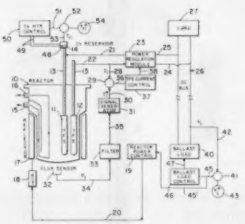
THERMIONIC REACTOR ELECTRICAL CONTROL SYSTEM

Daniel R. Wilkins, Saratoga, and Paul R. Hill, San Jose, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 28, 1972, Ser. No. 293,175

Int. Cl. G21c *7/00*

U.S. Cl. 176—39 **6 Claims**



A thermionic reactor electrical hookup and control system which provides for regulation of plant electrical output, individual control of fuel element emitter temperatures, and isolation of fuel element failure events. The control system is applicable to fast and thermal spectrum thermionic reactors for ground, sea and space applications.

3,801,446

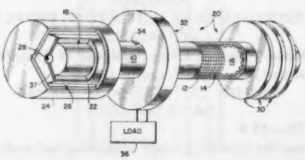
RADIOISOTOPE FUELED HEAT TRANSFER SYSTEM

Frederick J. Sparber, Belen, and Glen H. Whiting, Albuquerque, both of N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 5, 1968, Ser. No. 735,957

Int. Cl. F28d *15/00*; **G21d** *9/00*

U.S. Cl. 176—39 **10 Claims**



A heat transfer system for supplying a constant temperature to a heat utilization device including a heat transfer pipe hav-

ing the utilization device mounted intermediate an alpha emitting radioisotope fuel for vaporizing the working fluid of the heat pipe and a heat exchanger for dissipating excess heat from the condenser portion of the heat pipe, means for retaining helium generated by the radioisotope fuel and a passageway for transporting the helium to the interior of the heat pipe to maintain constant the internal pressure and vaporization temperature of the working fluid within the heat pipe as the rate of heat dissipation from the radioisotope decreases.

3,801,447

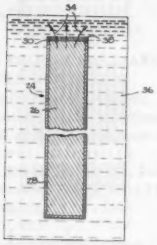
VENTILLATION OF NUCLEAR REACTION FUEL RODS

William A. Heenan, Chem. Emon. Dept. Caan Univ., Mayaguez, P.R.

Continuation-in-part of Ser. No. 808,571, March 19, 1969, abandoned. This application Nov. 16, 1971, Ser. No. 199,244

Int. Cl. G21c *3/10, 1/02*

U.S. Cl. 176—40 **4 Claims**



This invention relates to a venting device for nuclear reactor control and fuel rods having fissionable material contained in a cladding, characterized by a porous disk forming part of the wall of the rod, said disk allowing the fission gases to pass therethrough and preventing the liquid sodium coolant from entering the rod.

3,801,448

REMOVABLE TOP SHIELD FOR A NUCLEAR REACTOR CORE

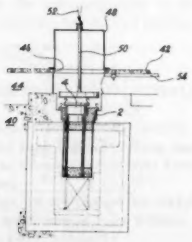
Robert Brandstetter, Meschers, and Marcel Robin, Sevres, both of France, assignors to Commissariat A L'Energy Atomique

Filed Nov. 21, 1972, Ser. No. 308,405

Claims priority, application France, Nov. 30, 1971, 71.42933

Int. Cl. G21c *11/00*

U.S. Cl. 176—40 **4 Claims**



The removable top shield comprises two rotating shield plugs mounted in eccentric relation for closing the top portion of the reactor vessel and is made up of metallic shielding flasks containing shielding elements and mounted on a frame so as to constitute a cluster unit. The cluster units are supported on flooring elements which are attached respectively to the large shield plug and the small shield plug of the reactor by means of a metallic structure and the flooring being carried on the lateral shields of the reactor core.

3,801,449

NUCLEAR REACTOR FUEL ELEMENT

Andre Cayol, Aix en Provence, and Georges Clottes, Manosque, both of France, assignors to Commissariate A L'Energie Atomique, Paris, France

Filed May 11, 1971, Ser. No. 142,315

Claims priority, application France, May 22, 1970, 70.18869

Int. Cl. G21c *3/18*

U.S. Cl. 176—68 **4 Claims**

A fuel element which is constituted by a vertically-disposed leak-tight can containing a column of pellets of fissile or fertile material carried by a rigidly fixed bearing member having at least one axial duct essentially comprises an intermediate component which is slidably mounted between the column and the bearing member. Longitudinal grooves are formed in the cylindrical wall of the intermediate component and communicate with radial grooves formed in the flat end faces of the component.

3,801,450

NUCLEAR-FUEL ELEMENT

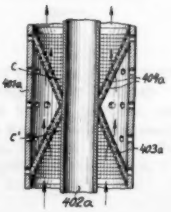
Heinz Barthels; Josef Fassbender, and Werner Katscher, all of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Dec. 17, 1971, Ser. No. 209,301

Claims priority, application Germany, Dec. 24, 1970, 2063876

Int. Cl. G21c *3/16*

U.S. Cl. 176—73 **11 Claims**



A fuel element for a nuclear reactor comprises a hollow structure forming a coolant path and one or more partitions

intercepting the coolant flow between the inlet and the outlet, the partitions comprising perforated, aperture or porous supporting walls flanking a porous mass of coated nuclear-fuel particles.

3,801,451

CERAMIC NUCLEAR FUEL OR BREEDER MATERIAL TABLETS AND METHOD OF PRODUCING THE SAME

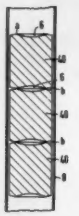
Hans Scharf, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 885,692, Dec. 17, 1969, abandoned. This application Feb. 14, 1972, Ser. No. 226,298

Claims priority, application Germany, Dec. 20, 1968, 1815957

Int. Cl. G21c *3/02, 3/30*

U.S. Cl. 176—73 **6 Claims**



Ceramic fissionable fuel or breeder material tablet axially alignable with corresponding tablets for forming nuclear reactor fuel rods includes a substantially cylindrical member having a depression at opposite end faces thereof, the end faces respectively comprising a marginal zone of slightly sloping conical shape having an angle of inclination within a range of 0.5° to 30°, the inclined marginal zone defining, with the remaining surface of the respective end face, an annular contact edge for contacting an end face of another tablet axially alignable therewith, the annular contact edge being spaced from the peripheral edge of the end face a given distance so that compression forces acting on the annular contact edge when the tablet is in use in a nuclear reactor fuel rod, are absorbable by a spatial region of the table having adequate strength for absorbing the compression forces.

3,801,452

NUCLEAR REACTOR FUEL ELEMENTS

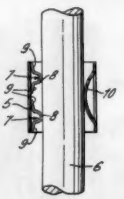
George Milburn, St. Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 21, 1970, Ser. No. 65,964

Claims priority, application Great Britain, Sept. 3, 1969, 43715/69

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **4 Claims**



A fuel pin spacer grid has apertures through which the fuel pins extend. Each fuel pin bears against two pairs of longitudinally spaced stop members being biassed against the stop members by spring means acting on the fuel pin intermediate the pairs of stop members. The stop members are semi-resilient so as to allow small lateral deflections of the fuel pins but so as to become rigid to prevent greater lateral deflections of the fuel pins.

3,801,453

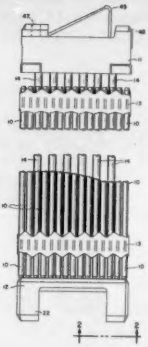
FUEL ASSEMBLY FOR POWER GENERATING NUCLEAR REACTOR

Cecil R. Jones, Hamden, Conn., assignor to Transfer Systems Incorporated, New Haven, Conn.

Filed Feb. 11, 1972, Ser. No. 225,406

Int. Cl. G21c *3/32*

U.S. Cl. 176—78 **11 Claims**



A fuel assembly especially adapted for a pressurized water reactor is described. It comprises a support assembly of control element guide tubes, upper and lower end fittings, and grid spacers holding a plurality of fuel rods in vertical parallel relation. The fuel assembly features a removable upper end fitting allowing on-site access to and removal of individual fuel rods, and a novel guide tube construction providing high volume coolant flow through the assembly and allowing ready access of a grapple having laterally, outwardly extending gripping fingers to the assembly for lifting purposes.

3,801,454

PRESSURE-PROOF CONNECTION FOR NUCLEAR REACTOR PRESSURE VESSELS

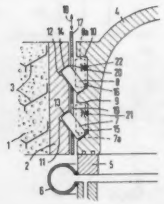
Hermann Kumpf, Wendelstein, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Mar. 17, 1972, Ser. No. 235,525

Claims priority, application Germany, Mar. 19, 1971, 2113314

Int. Cl. G21c *13/00*

U.S. Cl. 223 **4 Claims**



A pressure-proof connection is provided between a nuclear reactor pressure vessel cover member and a ring shaped

member about the cover member. The connection comprises at least two rows of levers disposed one above the other positioned between the cover member and ring. The levers are moved by a cylindrical plate to either lock or unlock the cover and ring member.

3,801,455

METHOD FOR PRODUCING CITRIC ACID

Takashi Suzuki; Yasuhiro Sumino, both of Hyogo; Shunichi Akiyama, Kyoto, and Hideo Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 130,851, April 2, 1971, abandoned. This application July 2, 1971, Ser. No. 159,461

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **26 Claims**

This invention relates to a method for producing citric acid, which comprises incubating a yeast, a mold or a bacterium whose growth is inhibited by a citric acid-antimetabolite or a precursor thereof and which is capable of accumulating a significant amount of citric acid in a cultured medium,and then recovering citric acid thus accumulated from said medium.

3,801,456

METHOD FOR PRODUCING L-ARGININE BY FERMENTATION

Koji Kubota, Kanagawa; Takiko Onoda, Tokyo; Hirotaka Kamijo; Fumihiro Yoshinaga, both of Kanagawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 19, 1972, Ser. No. 264,316

Claims priority, application Japan, June 21, 1971, 46-44620

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 R **3 Claims**

L-Arginine is produced by fermenting a culture medium containing n-alkanes as a carbon source by mutants of Brevibacterium and Arthrobacter capable of growing on a medium containing more than 200 μg/ml sulfaguanidine or 1,000 μg/ml 2-thiazolealanine.

3,801,457

METHOD FOR PRODUCING L-TRYPTOPHAN

Kei Arima, Tokyo; Ikuo Nugami, Kyoto, and Masahiko Yoneda, Kobe, all of Japan, assignors to Takedo Chemical Industries Ltd., Osaka, Japan

Filed Mar. 7, 1972, Ser. No. 232,617

Claims priority, application Japan, Mar. 9, 1971, 46-12970

Int. Cl. C12d *1/00*

U.S. Cl. 195—29 **11 Claims**

An improved method is provided for producing L-tryptophan by cultivating a microorganism of the genus Bacillus which requires anthranilic acid for its growth and is also resistant to the inhibiting action of anthranilic acid. The microorganism is cultivated in a medium containing a growth-limiting amount of anthranilic acid, indole and/or tryptophan followed by the addition to the culture broth of anthranilic acid so as to cause the microorganism to elaborate L-tryptophan and then recovering the desired product.

3,801,458

PROCESS FOR PREPARING CEPHALOSPORIN DERIVATIVES

Robert Anthony Fildes, Bouth near Ulverston; James Rowland Potts, Marlow, and John Eaton Farthing, Southall, all of England, assignors to Glaxo Laboratories Limited, Greenford Middlesex, England

Filed Apr. 18, 1972, Ser. No. 245,258

Claims priority, application Great Britain, Apr. 21, 1971, 10566/71; Mar. 28, 1971, 10566/71

Int. Cl. C12d *9/00*

U.S. Cl. 195—29 **13 Claims**

A process for the preparation of a 7β-acylamidocephalosporin having a 7β-substituent selected from 5-carboxy-5-oxopentanamido and 4-carboxybutanamido includes the step of contacting a corresponding compound having a 7β-(D-5-amino-5-carboxypentanamido) group with activated cells of Trigonopsis variabilis under aerobic conditions, catalase activity being present in said cells when the desired product has a 7β-(5-carboxy-5-oxopentanamido) group.

3,801,459

STEREOSPECIFIC MICROBIOLOGICAL HYDROLYSIS PROCESS

Frank B. Colton, Evanston; William J. Marsheck, Lake Zurich, and Masateru Miyano, Morton Grove, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 14, 1972, Ser. No. 244,293

Int. Cl. C12d *1/02*

U.S. Cl. 195—30 **5 Claims**

The stereospecific microbiological hydrolysis of racemic 2-substituted-(optionally Δ^1) 3-acyloxy-5-oxocyclopentaneheptanoic acids and their lower alkyl esters with Saccharomyces sp. N.R.R.L. Y–7342 affords the corresponding 3α-hydroxy acids or the corresponding esters. Those compounds are intermediates in the preparation of optically active prostaglandin derivatives which are useful as pharmacological agents.

3,801,460

SIMULTANEOUS STEROID OXYGENATION AND 1-DEHYDROGENATION WITH BACILLUS CEREUS

Thomas H. Stoudt, Westfield, and Robert A. Long, East Brunswick, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 722,131, April 17, 1968, abandoned, which is a continuation of Ser. No. 601,313, Dec. 13, 1966, which is a continuation of Ser. No. 545,876, April 28, 1966, abandoned, which is a continuation of Ser. No. 387,219, Aug. 3, 1964, abandoned, which is a continuation-in-part of Ser. No. 208,608, July 9, 1962, abandoned. This application Dec. 18, 1970, Ser. No. 99,682

Int. Cl. C07c *167/08, 167/14*

U.S. Cl. 195—51 A **4 Claims**

The invention disclosed herein relates to the process in which an 11-desoxy-3-oxygenated -Δ^4-steroid is subjected to the action of Bacillus cereus microorganisms thereby effecting simultaneous oxygenation (i.e., 11-hydroxylation) and Δ^1-dehydrogenation of the steroid to produce an 11β-hydroxy-3-oxygenated-$\Delta^{1,4}$steroid. For example, the 11-desoxy-3-oxygenated-Δ^4steroid, Compound S, is converted directly by this microbiological oxygenation-dehydrogenation procedure to its 11β-hydroxy-Δ^1-dehydro analog, prednisolone, which is known to be useful as an anti-inflammatory agent.

3,801,461

PROCESS FOR THE EXTRACTION OF ENZYMES FROM MICROORGANISMS

Toshio Miyake, and Makoto Shiosaka, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Filed Aug. 31, 1971, Ser. No. 176,732

Claims priority, application Japan, Sept. 2, 1970, 45/76857

Int. Cl. C07g *7/028*

U.S. Cl. 195—66 R **4 Claims**

The present invention relates to a process for the extraction of enzymes from microorganisms which is characterized in that an urea solution is used in the extraction of intracellular enzymes produced in cells of microorganisms.

3,801,462

PRODUCTION OF BETA-AMYLASE

Masakazu Mitsuhashi, and Mamoru Hirao, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Filed Apr. 23, 1971, Ser. No. 137,026
Claims priority, application Japan, May 4, 1970, 45-38142
Int. Cl. C07g 7/02
U.S. Cl. 195—66 R 5 Claims

Beta-amylase is produced from the waste liquor obtained during the production of batata starch by adjusting the pH of the waste liquor to less than 4.5 to form a precipitate and recovering beta-amylase from the precipitate.

3,801,463

PREPARATION OF ENZYMES IN PARTICULATE FORM

Petrus Johannes Eygermans, Wateringen, Netherlands, assignor to Koninklijke Nederlandsche Gist-En Spiritus-Fabriek N.V., Delft, Netherlands

Filed Oct. 13, 1971, Ser. No. 188,961
Claims priority, application Great Britain, Oct. 14, 1970, 48925/70
Int. Cl. C07g 7/02
U.S. Cl. 195—68 11 Claims

A process for preparing an enzyme composition in particulate form by centrifugally dispersing a liquid containing an enzyme and a binder from identical teeth which move along a circular path in a horizontal or substantially horizontal plane, said teeth having tops arranged to form droplets which are allowed to travel freely through a cooling zone to form solid particles comprising the enzyme and the binder. The process results in enzyme-containing particles having a narrow range of particle sizes and substantially no dust fraction, which enzyme-containing particles are extremely useful for inclusion in washing compositions.

3,801,464

ANTIBIOTIC A16886 AND PROCESS FOR PRODUCTION THEREOF

Marvin Gorman; Calvin E. Higgens, and Ramakrishanan Nagarajan, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 62,390, Aug. 10, 1970, which is a continuation-in-part of Ser. No. 849,395, Aug. 12, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,969
Int. Cl. C12d 9/00
U.S. Cl. 195—80 R 6 Claims

Antibiotic A16886I and antibiotic A16886II and their salts, having antibacterial and anthelmintic activity, prepared by fermentation of Streptomyces clavuligerus NRRL 3585.

3,801,465

ERYTHROMYCIN E

Jerry Roy Martin, Waukegan, and Alma W. Goldstein, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 107,428, Jan. 18, 1971, Pat. No. 3,714,142. This application Jan. 22, 1973, Ser. No. 325,695
Int. Cl. C12d 9/00
U.S. Cl. 195—80 R 1 Claim

Erythromycin E is useful as an antibiotic. The compound is prepared by the fermentation of erythromycin with *Streptomyces erythreus* NRRL 3887 in suitable nutrient media.

3,801,466

URIC ACID ASSAY AND REAGENTS THEREFOR

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Dec. 2, 1971, Ser. No. 204,333
Int. Cl. G01n 33/16, 31/14
U.S. Cl. 195—103.5 R 4 Claims

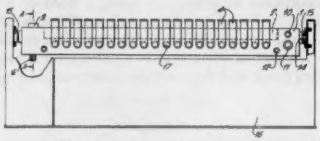
A colorimetric assay for uric acid, the assay being of a type which uses uricase to eliminate the uric acid in a blank test so that its specific effect can be detected by comparison with a specimen not having the uric acid effect eliminated, in which a buffer is used in both the test and the blank steps, thus avoiding the extra expense and error of protein-precipitation steps and other steps or other disadvantages of prior methods.

3,801,467

APPARATUS FOR PROVIDING TEMPERATURE GRADIENTS

Akira Nobe, Tokyo, and Toshitaka Nakae, Okayama, both of Japan, assignors to Tokyo Kagaku Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1970, Ser. No. 96,319
Int. Cl. C12k 1/00
U.S. Cl. 195—139 9 Claims



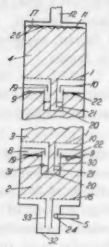
Apparatus for providing temperature-gradients, incorporating a block of thermally-conductive material provided with a heating source at one end and a cooling source at the other end, and adapted to subject a group of like specimens to different temperatures.

3,801,468

FERMENTATION APPARATUS

Melvyn Lumb, Peter Edward Macey, Richard Donald Wright, and Roy Kenneth Petchell, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Original application Dec. 8, 1967, Ser. No. 689,019, now Patent No. 3,705,841. Divided and this application Aug. 3, 1972, Ser. No. 277,672
Int. Cl. C12b 1/00
U.S. Cl. 195—141 5 Claims



A fermentation tower suitable for carrying out continuous fermentation processes therein when positioned with its longitudinal axis substantially vertical which comprises an elongate tower provided with inlet means for introducing fermentable liquid near one end of the tower and outlet means for the withdrawal of products of fermentation near the other end of the tower, and divided into a plurality of compartments connected in series, the outlet end of each compartment being connected to the inlet end of the compartment adjacent in the direction of flow through a partition member fixed within the tower in a plane substantially transverse to the longitudinal axis of the tower adapted to allow but restrict gas flow through the tower in the direction from inlet means to outlet means, each of said partition members being partially occluded by a baffle plate fitted on the inlet side in a plane substantially transverse to the longitudinal axis of the

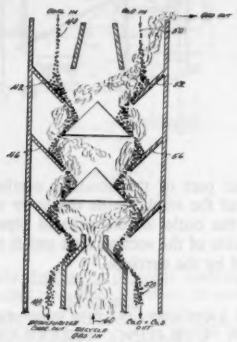
tower. The invention also resides in the continuous process of fermentation resulting in increased rates of output of fermentation products for a given volume of fermenter.

3,801,469

METHOD FOR EFFECTING CHEMICAL REACTIONS BETWEEN CASCADING SOLIDS AND COUNTERFLOWING GASES OR FLUIDS

Robert H. Essenhigh, State College, Pa., assignor to Scientific Research Instruments Corporation, Baltimore, Md.

Filed Aug. 31, 1971, Ser. No. 176,523
Int. Cl. C10b *57/00*
U.S. Cl. 201—17 **5 Claims**



A method and means for efficiently chemically reacting particulate solids and fluids such as gases in a continuous counterflowing process. The particulate solid is passed downwardly in a cascade through a baffle plate structure to materially increase its residence time in the reactor. The fluid is flowed upwardly through the same baffle structure. Dual cascade reactors using parallel baffle structures to keep two different solid particulates separated while yet facilitating fluid passage therebetween are shown which are particularly advantageous, for instance, in coal desulfurization where sulfur containing coal and calcium oxide particulates are passed in separate but parallel cascades and a hydrogen containing gas is successively passed between the dual cascades in a continuous dual cascade, counter-flowing desulfurization reaction. The upward flow of the gas through the baffle structure intermixes with the downward particulate flow substantially between baffle plates where the relative directions of flow are disposed at a substantial angle to thereby reduce the adverse effects otherwise ensuing from drag by the descending particulate stream on the surrounding fluid.

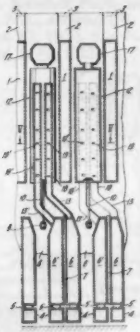
3,801,470

HEATING ARRANGEMENT FOR REGENERATIVE COKE OVEN BATTERIES HEATED WITH RICH GAS OR LEAN GAS

Johannes Knappstein, Friedrich Thiersch, and Werner Schuch, Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Continuation of abandoned application Ser. No. 123,614, Mar. 12, 1971. This application Feb. 28, 1973, Ser. No. 336,813
Claims priority, application Germany, Mar. 19, 1970, P 20 13 024.9
Int. Cl. C10b *1/06, 5/12, 21/16*
U.S. Cl. 202—142 **13 Claims**

The coke oven batteries include heating flues in heating walls, with the flues having respective headers provided with ducts and lean gas or air transfer slots connecting the header ducts and the heating flues, and include regenerators sub-divided into compartments which, on one hand, communicate through floor ducts with lean gas, air or waste heat valves and, on the other hand, communicate with the header ducts. The respective outlet cross-sections of the transfer slots of respective header ducts, communicating with the same heating flue and connected to respective different regenerator compartments, differ, throughout the height of the heating flue, in respective defined orders, with there being at least two different such defined orders for each heating flue. Thus, the outlet cross-sections of the slots can increase linearly throughout the height of the flue or decrease linearly throughout the height of the flue. Alternatively, the change in the cross-sections can be non-linear, throughout the height of the flue.

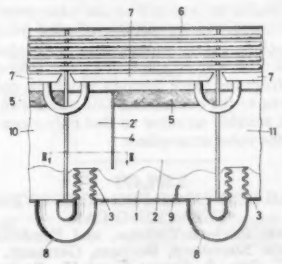


3,801,471

MULTI-STAGE FLASH DISTILLATION PLANT

Kazuo Sato and Kenji Kamiyama, Tokyo, and Koichi Tahara, Kanagawa-ken, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

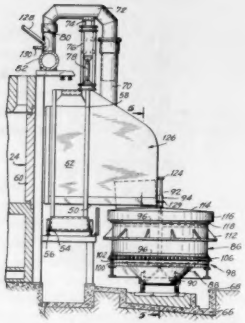
Filed Feb. 8, 1971, Ser. No. 113,424
Claims priority, application Japan, Feb. 12, 1970, 45/11,502
Int. Cl. 301d *3/06*
U.S. Cl. 202—173 **2 Claims**



The invention disclosed is for a multi-stage flash evaporator having a plurality of flash chambers separated by partitioning walls wherein seawater is flashed under lower pressure in each subsequent stage after the first stage. A seawater flow path connecting each adjacent pair of flash chambers is provided near its open end on the low-pressure side with means having a bellows-like or accordion-

shaped passage having a cross-sectional area smaller than the flow path so as to flash seawater.

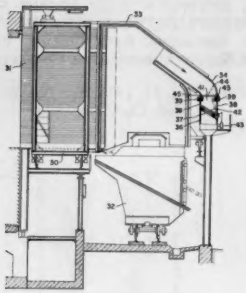
3,801,472
APPARATUS FOR SMOKELESS PUSHING AND TRANSPORTATION OF HOT COKE
Roland Kemmetmueller, Carlton House, 550 Grant, Pittsburgh, Pa. 15230
Filed Oct. 12, 1972, Ser. No. 296,963
Int. Cl. C10b *33/00*
U.S. Cl. 202—263 **10 Claims**



Apparatus for the smokeless pushing and transportation of hot coke. A bucket whose interior volume is large enough to receive the entire contents of a coke oven is positioned in alignment with a coke oven which is to be emptied while a cover on top of the bucket, a hood extending from the cover to a coke guide, and the coke guide itself all define a space closed off from the outer atmosphere and through which the coke travels while being pushed from the coke oven into the bucket. After the bucket is filled with this coke, it is transported on a car which carries the bucket to a bunker where the bucket is raised to the top of the bunker into which the contents of the bucket are emptied so that dry-quenching of the coke can take place in the bunker. The space between the bucket and the bunker is also closed off from the outer atmosphere during charging of the bunker with coke from the bucket. Then the empty bucket is returned to the next oven which is ready for pushing. During pushing of coke from an oven into the bucket, gases, vapors, and particulate matter which might otherwise escape to the outer atmosphere are withdrawn from the space through which the coke travels from the oven to the bucket, and this withdrawn matter is cleaned in a suitable scrubber so that only clean gases are released to the outer atmosphere.

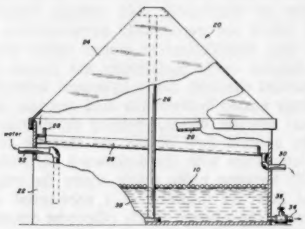
3,801,473
EXHAUST HOOD FOR COKE OVEN QUENCHING CAR
Erich Schoen, Bochum-Weitmar, and Friedrich Drebes and Gunter Birresborn, Bochum, Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, West Germany
Filed Mar. 9, 1971, Ser. No. 122,431
Claims priority, application Germany, Oct. 3, 1970, P 20 48 739.2
Int. Cl. C10b *33/00*
U.S. Cl. 202—263 **5 Claims**

A quencher car runs along a track in front of a carriage that is movable along the front of a battery of coke ovens and that supports a tubular coke guide through which coke can be pushed from any oven into the quencher car. The carriage also carries a fume-collecting hood that projects laterally from it over the track to overlie the quencher car. The hood has an inner side wall provided with an opening registering with the outlet of the guide. An exhaust pipe secured to the hood has an inlet



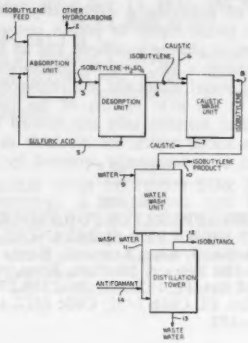
in the upper part of the hood. A suction duct extends lengthwise of the track beside the outer side wall of the hood, and the outlet of the exhaust pipe communicates with the inside of the suction duct and is movable lengthwise thereof by the carriage.

3,801,474
PROCESS AND APPARATUS FOR SOLAR DISTILLATION UTILIZING CELLULAR CERAMIC NODULES TO IMPROVE THE EVAPORATION RATE
Nicholas T. Castellucci and Ned C. Krouskop, Pittsburgh, Pa., assignors to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Continuation of abandoned application Ser. No. 829,375, June 2, 1969. This application Sept. 10, 1971, Ser. No. 179,305
Int. Cl. B01d *1/22*
U.S. Cl. 203—10 **10 Claims**



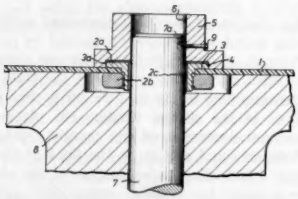
This disclosure relates to a process for recovering fresh water from brine or salt water by solar distillation. An inventory of substantially spherical cellular ceramic nodules having an outer textured surface is positioned on the upper surface of a body of sea water within a container. The nodules float on the upper surface of the salt water in a partially submerged condition with the upper exposed surfaces of the nodules above the surface of the water. The upper surfaces of the nodules are wetted by the water and a relatively thin film is formed thereon. The film on the upper surface of the nodules is subjected to elevated temperatures by solar radiation and the water in the thin film evaporates and is continually replaced as a thin film from the body of water. The water vapor condenses on a covering surface over the container and is suitably collected.

3,801,475
ANTI-FOAMING PROCESS BY THE ADDITION OF A QUATERNARY AMMONIUM SALT
William H. Taylor, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
Filed Dec. 19, 1969, Ser. No. 886,761
Int. Cl. B01b *1/02*
U.S. Cl. 203—20 16 Claims



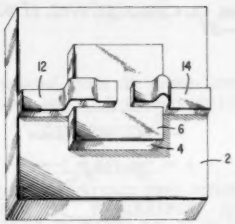
Foaming in the distillation of polar materials from water can be curtailed by adding between 20 and 200 p.p.m. of dialkyl dicoco quaternary ammonium salt to the material to be distilled preferably prior to the beginning of the distillation.

3,801,476
METHOD FOR IMPROVING THE CENTERING OF STAMPING MATRICES
Klaus Röschmann and Alwin Wühle, Nortorf, Germany, assignors to Teldec Telefunken-Decca Schallplatten GmbH, Hamburg, Germany
Filed Feb. 27, 1973, Ser. No. 336,216
Claims priority, application Germany, Mar. 1, 1972, P 22 09 689.5, P 72 07 723.7
Int. Cl. B29d *17/00*; C23b *7/00*
U.S. Cl. 204—5 4 Claims



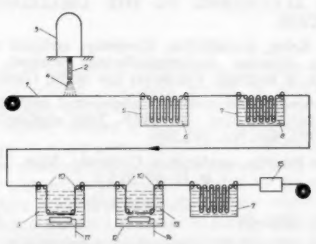
The care and accuracy of centering the negative, e.g. the master or stamping matrix, used in the production of sound and video record discs is improved by preparing the original lacquer foil record so that the negative will have a profile which extends centrically to the record groove spiral. This is accomplished by, prior to the cutting of the spiral groove containing the recorded information into the lacquer foil, inserting a centering core, which has a central bore of a diameter sufficient to accept the spindle of the recorder turntable and has a laterally extending annular flange defining a galvanically reproducible centering edge, into a centering hole in the foil and then, after placing the lacquer foil with the centering core on the recorder turntable, placing a centering sleeve with two concentric bores over the spindle of the recorder turntable to engage the centering edge of the core with one bore and to engage the spindle with the other bore so as to centrically position the lacquer foil about the spindle. When high cutting disc speeds are employed, the sleeve is preferably fastened to the spindle. The sleeve may be formed by conventional machining methods or by galvanic action.

3,801,477
METHOD OF DEPOSITING ELECTRODE LEADS
Ram Shaul Ronen, Kendall Park, and Edward Anthony James, Skillman, N.J., assignors to RCA Corporation
Filed June 23, 1972, Ser. No. 265,550
Int. Cl. B44d *1/18*; C23b *5/48*; H01l *1/14*
U.S. Cl. 204—15 6 Claims



Method of making an electrical lead connection to the top surface of a passivation coated semiconductor device chip mounted on a substrate, where the lead is a conducting metal path extending across the substrate and over an edge of the chip, comprising depositing a first thin, electrically conductive layer of metal over both substrate and coated chip, covering the first layer of metal with a thick layer of photoresist, removing portions of photoresist layer conforming to the desired shape of the lead, electrodepositing a thick layer of metal where the photoresist has been removed, covering the thick layer of metal with a layer of a material which is resistant to a particular solvent for the first metal layer, and treating the chip and substrate with the solvent to remove that part of the first metal layer not covered by the resistant material.

3,801,478
PROCESS OF METALLIZING POLYMERIC MATERIALS
Adolf Heger and Frank Wittig, Dresden, Germany, assignors to Veb Textilkombinat Cottbus, Cottbus, Germany
Filed Jan. 27, 1972, Ser. No. 221,451
Int. Cl. C23b *5/60*
U.S. Cl. 204—22 6 Claims



The surface of organic or inorganic polymeric substrates, particularly textile materials, is metallized by

applying a firmly adhering surface coating to the polymeric substrate, for instance by a graft process, and then making the surface coating thus applied conductive, and finally superimposing a metallic or non-metallic coating or reinforcement by a galvanic process on the said surface.

3,801,479

METHOD OF MANUFACTURING SOLID ELECTROLYTIC CAPACITORS

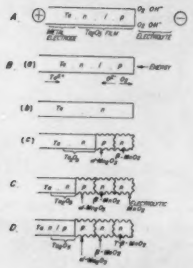
Atsushi Nishino, Neyagawa, Hiroshi Kumano, Daito, and Hayashi Hayakawa, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 7, 1972, Ser. No. 232,591

Claims priority, application Japan, Mar. 11, 1971, 46/13,822; Apr. 8, 1971, 46/22,206

Int. Cl. C23b *5/52, 9/02, 11/02*

U.S. Cl. 204—37 **7 Claims**



A method of manufacturing solid electrolytic capacitors comprising the steps of forming a semiconductive dielectric film on the surface of a base body of such material as valve action metals, pyrolytically depositing a semiconductive metal oxide on the dielectric film, and uniformly electrodepositing a thin film of a semiconductive metal oxide by electrolytic oxidation from a bath of a metallic salt solution. The bath is heated such that the excited charge carriers in the semiconductive dielectric film and the pyrolytically deposited semiconductive metal oxide can be utilized for said electrolytic oxidation.

By this method solid electrolytic capacitors having improved characteristics are obtained.

3,801,480

PROCESS FOR REDUCING LOSSES OF MERCURY IN THE ALKALI METAL CHLORIDE ELECTROLYSIS ACCORDING TO THE AMALGAMATION PROCESS

Martin Krieg, Gerathofen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 806,678, Mar. 12, 1969. This application Sept. 20, 1971, Ser. No. 182,200

Claims priority, application Germany, Mar. 22, 1968, P 17 67 026.7

Int. Cl. C01d *1/06*

U.S. Cl. 204—99 **3 Claims**

Losses of mercury arising during filtration in the electrolytic production of chlorine according to the amalgamation process with electrolyte cycle and alkaline filtration of the electrolyte are reduced by adding hypochlorite to the electrolyte before the filtration.

3,801,481

METHOD FOR PURIFYING THE LIQUOR OF A GALVANIZING PROCESS PLANT AFTER CONTAMINATION

William L. Eddleman, Beaumont, Tex., assignor to David B. Dean and Douglas B. Hayden, Jr., fractional part interest to each

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,186

Int. Cl. C02c *5/12*

U.S. Cl. 204—149 **8 Claims**

A method of purifying a galvanizing and/or metal cleaning plant pickle liquor to permit re-use, which includes the steps of placing a cathode and an anode in the liquor and passing a DC current therethrough. Nacent iron and other metal molecules are recovered by means of a magnet in the near vicinity of the cathode. Iron oxides and other metallic salts are formed in the near vicinity of the anode which are insoluble in the liquor, and which can be subsequently removed by filtration.

3,801,482

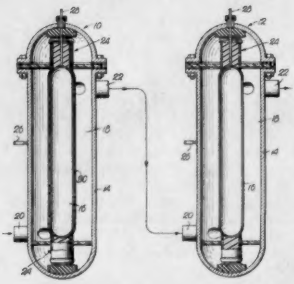
METHOD AND APPARATUS FOR FLOCCULATION OF DISSOLVED SUBSTANCES

Arthur S. King, Leawood, Kans. (9013 W. 51st Terrace, Merriam, Kans. 66203)

Filed Oct. 17, 1972, Ser. No. 298,278

Int. Cl. C02b *1/82;* **C02c** *5/12*

U.S. Cl. 204—152 **4 Claims**



Rapid flocculation of particles contained within fluids, such as solids dissolved in water, is caused by passing the fluid first through an electrostatic treater and subsequently through an electrolytic treater so that the fluid exposed to an electrostatic field in the first treater is then subjected to electrolysis in the second treater. No plating out of particles on the electrodes of the second treater occurs because of the residual effects on the fluid of the electrostatic treater. Alternative embodiments of the electrolytic treater are adapted for pipeline connection and settling pond flotation respectively.

3,801,483

PROCESSES FOR THE PREPARATION OF CHLOROIMINOPHOSGENE

William S. Durrell, 56 High Way, Chappaqua, N.Y. 10514, and Robert J. Eckert, Jr., 4817 Ravine Court, Mobile, Ala. 36608

No Drawing. Continuation-in-part of abandoned application Ser. No. 862,519, Sept. 30, 1969. This application May 25, 1972, Ser. No. 256,690

Int. Cl. B01j *1/10*

U.S. Cl. 204—157.1 R **7 Claims**

Chloroiminophosgene, usaful as a fungistat, bleaching agent and chemical intermediate, is produced by a procedure involving the reaction of cyanogen chloride with chlorine in the presence of radiation. Chloroiminophos-

gene is also prepared by a method involving its concentration in an isolation from cyanogen chloride gas streams.

3,801,484

FIXATION OF NITROGEN TO FORM NITRATES

Everett R. Johnson, Chevy Chase, and Earl W. Holtzcheiter, Jr., College Park, Md., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,560
Int. Cl. B01j 1/10
U.S. Cl. 204—157.1 H 6 Claims

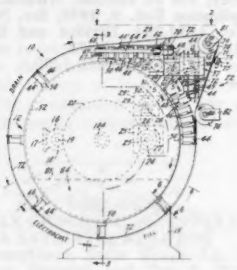
A method of forming a nitrate or nitrite by contacting a mixture of nitrogen and oxygen with a perbromate, bromate, bromite or hypobromite in the presence of ionizing radiation.

3,801,485

APPARATUS AND METHOD FOR ELECTRODEPOSITING A COATING ON INTERIOR SURFACES OF CONTAINER BODIES

Hans Kossmann, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Sept. 1, 1972, Ser. No. 285,643
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 41 Claims



An electrocoating system comprises an apparatus, method and valve for electrodepositing a coating on interior electrically-conductive surface areas of container bodies.

Container bodies having an open end are timedly fed onto circumferentially aligned rows of valves on the exterior of a rotating cylindrical drum containing an electrolytic fluid. Continuous anodic cables extend around the drum, exert axial pressure on the bottoms of the containers, render them anodic, sealingly engage their rims on the valves and thereby open the valves to gravity-feed the fluid into the bodies. With fluid therein, current passed through cathodic electrodes projecting from the valve exteriors into the bodies, electrodeposits a coating on the electrically-conductive surface areas of the container bodies. During continued drum rotation, fluid gravity-drains from the coated bodies back into the drum, and the empty, coated bodies are discharged from the system.

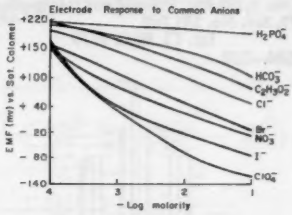
3,801,486

CHLORIDE SENSING ELECTRODE

Warren M. Wise, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 18, 1972, Ser. No. 254,417
Int. Cl. G01n 27/46
U.S. Cl. 204—195 L 3 Claims

Liquid organic ion exchange electrode having a 10:1 selectivity for chloride over bicarbonate. The chloride sensing phase of the electrode comprises a high molecular weight quaternary ammonium salt dissolved in at least one solvent selected from the group consisting of 1-phenyl-1-heptanol and 2,2,2, trifluoroethyldeconate.

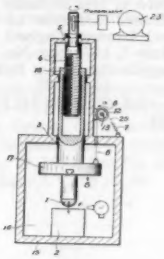


3,801,487

DEVICE FOR ADJUSTING THE WORKING GAP BETWEEN THE WORKPIECE AND TOOL ELECTRODES DURING AN ELECTROCHEMICAL MACHINING OPERATION

Dietrich Phal, Dietzenbach, Germany, assignor to NASSOVIA Werkzeugmaschinenfabrik G.m.b.H., Langen, Germany

Filed Sept. 2, 1971, Ser. No. 177,359
Claims priority, application Germany, Sept. 5, 1970, P 20 44 058.8
Int. Cl. B23p 1/14
U.S. Cl. 204—224 M 8 Claims

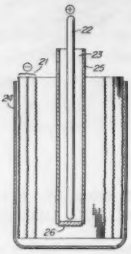


Method of and device for adjusting the working gap in an electrochemical machining system in which a tool electrode poled as cathode is by means of a feed motor moved relative toward a workpiece electrode poled as anode and in which after adjustment of a working gap between the electrodes an electrolyte is pumped through the working gap, while electrically parallel to the two electrodes there is provided a voltage detector which controls switch means for the feed motor in such a way that in the absence of a metallic contact between the two electrodes the tool electrode is moved by the feed motor toward the workpiece electrode whereas in response to a metallic contact between the electrodes the voltage detector opens the switch means, and the feed motor is stopped.

3,801,488
ELECTROLYTIC APPARATUS FOR DECOLORIZING FOOD

Akira Okuhara and Takashi Nakajima, Noda, and Nobuo Saito, Nagareyama, Japan, assignors to Kikkoman Shoya Co., Ltd., Noda-shi, Japan

Original application Mar. 9, 1970, Ser. No. 17,632, now Patent No. 3,709,802. Divided and this application Aug. 18, 1972, Ser. No. 281,760
Int. Cl. B01k *3/10*
U.S. Cl. 204—252 6 Claims

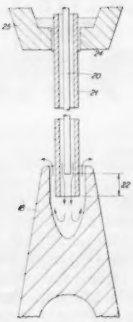


An apparatus for decolorizing melanoidins formed in a liquid food, utilizing an electrolytic cell wherein the liquid food is subjected to an electrolytic treatment in an electrolytic cell having an anode chamber with an anolytic solution therein preferably isolated so as not to be in direct contact with the liquid food, a cathode chamber having at least one cathode means, said cathode chamber containing the liquid food, and electrical means for said anode and cathode connected to an electric source. Where a plurality of cathode members are placed in the cathode chamber, each cathode member is provided with resistor means to make the current density of the cathodes uniform.

3,801,489
TOOL FOR ELECTROLYTIC DRILLING OF HOLES

David Samson, Derby, England, assignor to Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed July 7, 1971, Ser. No. 160,474
Claims priority, application Great Britain, July 16, 1970, 34,585/70
Int. Cl. B23p *1/12*
U.S. Cl. 204—284 6 Claims



A tool for use in the electrolytic drilling of holes, comprising a self-supporting tube of electrically insulating material having an operative free open end, an electrically conducting wire which extends along the bore of the tube, with clearance between the wire and the bore, to permit flow of electrolyte, and a support which fixes the wire axially relatively to the tube so that a free end of the wire is within the tube and spaced axially from the free end of the tube, and which provides for electrical connection to the wire, and for supply of electrolyte to the clearance.

3,801,490
PYROCHLORE ELECTRODES

Cletus N. Welch, Clinton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

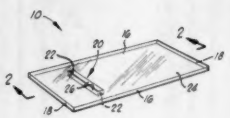
No Drawing. Filed July 18, 1972, Ser. No. 272,823
Int. Cl. B01k *3/06*; C01b *11/26*
U.S. Cl. 204—290 F 9 Claims

Electrodes useful for electrochemical reactions are disclosed. Also disclosed are electrolytic cells using such electrodes and the use of such electrodes in the conduct of electrochemical reactions. The electrodes have a pyrochlore-containing surface on a suitable electroconductive base.

3,801,491
STABILIZING MEDIA TEMPLATE

Leo P. Cawley, 550 N. Hillside, Wichita, Kans. 67208

Original application Feb. 9, 1970, Ser. No. 9,624, now Patent No. 3,691,054. Divided and this application Apr. 10, 1972, Ser. No. 242,872
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 3 Claims



This invention is a template structure for electrophoresis and immunoelectrophoresis processes including a relatively thin sheet member inert to and adapted to receive a stabilizing media gel on one side and having an aperture therein. More particularly, this invention relates to a thin sheet member with an aperature and adapted to receive on a surface a relatively thin coating of the stabilizing media gel forming a well with the aperture to receive a sample of serum therein.

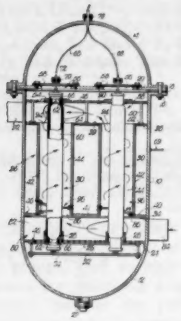
3,801,492
APPARATUS FOR ELECTRICALLY TREATING LIQUIDS

Arthur S. King, Prairie Village, Kans. (9013 W. 51st Terrace, Merriam, Kans. 66203)

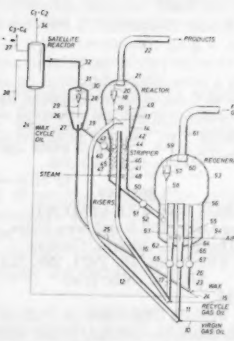
Continuation-in-part of abandoned application Ser. No. 38,011, May 18, 1970. This application June 7, 1972, Ser. No. 260,477
Int. Cl. B01d *13/02*
U.S. Cl. 204—302 10 Claims

A fluid treater has multiple flow paths in order to treat large quantities of water, for example, with an electric field without substantial pressure drop. The treater is provided with a lower intake manifold having a configuration which causes essentially laminar flow of the water in the manifold along a spiral path having convolutions of successively reduced diameter. Outlet ports of the manifold are spaced along such path and are in communication with tubular, outer electrodes through which the water is swirled upwardly by helical guide screws to a similarly

arranged upper discharge manifold where the plural paths are recombined. Through the use of a set of inner electrodes coaxially disposed within the outer electrodes, the water in each path is subjected to a radial electric field in the annular passage defined by the respective inner and outer electrode pair. The tubular wall of each outer electrode is inset to concentrate the electrostatic field in the annular passage, the inner electrode having an electrically conductive outer surface at least coextensive with the tubular wall. The construction permits any of the inner electrodes to be readily replaced without disassembling the treater.

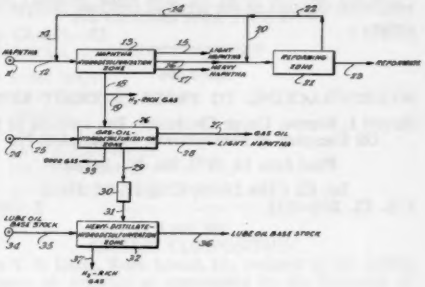


3,801,493
SLACK WAX CRACKING IN AN FCCU WITH A SATELLITE REACTOR
Douglas J. Youngblood, Baton Rouge, La., and Robert E. Kuhlmann, Houston, and Roy E. Pratt, Groves, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,522
Int. Cl. B01j *9/20;* **C10g** *11/00*
U.S. Cl. 208—78 **6 Claims**



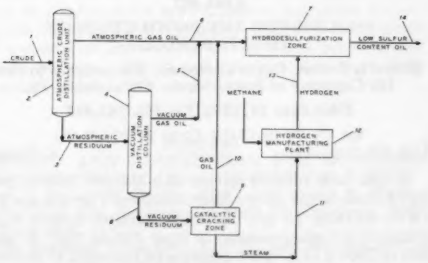
A fluid catalytic cracking process wherein a gas-oil and slack wax are converted into hydrocarbons boiling below 430° F. The process employs two reactors such that high pour point temperature components of slack wax do not contaminate light cycle oil products of gas-oil cracking.

3,801,494
COMBINATION HYDRODESULFURIZATION AND REFORMING PROCESS
Thomas M. Moore, Crown Point, and Thomas F. Boyden, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Sept. 15, 1972, Ser. No. 289,670
Int. Cl. C10g *5/04, 35/18*
U.S. Cl. 208—79 **14 Claims**



The process comprises contacting a desulfurized naphtha in a reforming zone in the presence of a hydrogen-containing gas with a reforming catalyst comprising a Group VIII noble metal, a small amount of a metal promoter, and a combined halogen on a catalytically active alumina at a pressure of about 50 p.s.i.g. to about 250 p.s.i.g. and an inlet temperature of at least 970° F. to provide a reformed effluent containing increased amounts of hydrogen and gasoline boiling components; separating the hydrogen-containing gas from the gasoline boiling components and passing the hydrogen-containing gas sequentially through a naphtha-hydrodesulfurization zone, a gas-oil-hydrodesulfurization zone, and a heavy distillate-hydrodesulfurization zone. The naphtha being hydrodesulfurized in the naphtha-hydrodesulfurization zone is the desulfurized naphtha that is employed in the reforming zone. The preferred metal promoter of the reforming catalyst is rhenium.

3,801,495
INTEGRATED PROCESS COMBINING CATALYTIC CRACKING WITH HYDROTREATING
George D. Gould, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed May 19, 1972, Ser. No. 255,074
Int. Cl. C10g *37/00*
U.S. Cl. 208—97 **6 Claims**



An integrated process is disclosed, comprising catalytically cracking a hydrocarbon feedstock in a catalytic

cracking zone; passing the gas oil portion of the effluent from the catalytic cracking zone to a hydrotreating zone; regenerating the catalytic cracking catalyst used in the catalytic cracking zone by burning carbonaceous deposits therefrom, thereby producing heat; heating water to produce steam using this heat; producing hydrogen from this steam; passing at least a portion of the hydrogen formed to the hydrotreating zone; and catalytically hydrotreating the gas oil portion in the hydrotreating zone. Alternatively, the hydrogen can be produced by reacting the carbonaceous deposits on the catalytic cracking catalyst with steam.

3,801,496

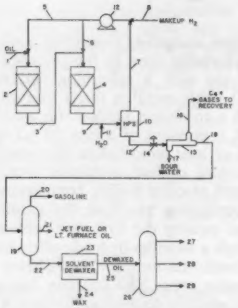
HYDROCRACKING TO PRODUCE LIGHT LUBES

Robert I. Benner, Upper Chichester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 14, 1972, Ser. No. 262,889

Int. Cl. C10b *33/28;* **C10g** *13/02, 37/10*

U.S. Cl. 208—111 **7 Claims**



Hydrocracking gas oil using a palladium impregnated zeolite catalyst particularly Mg-H-zeolite Y, at from 650° F. to 725° F., from 1250 p.s.i.g. to 1750 p.s.i.g., a LHSV of 1.0 to 2, fractionating the thus produced hydrocrackate to provide a fuel fraction and a lube fraction, dewaxing the lube fraction, preferably by solvent dewaxing and recovering a lube boiling above 600° F. in at least a 20% yield, and more usually recovering a lube boiling above 650° F. in at least a 25% yield.

3,801,497

PROCESS FOR THE PRODUCTION OF TRACTION FLUID

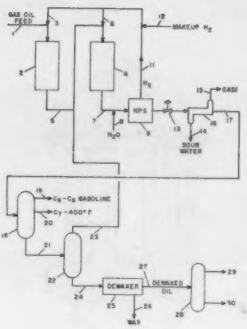
Robert I. Benner, Upper Chichester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 16, 1972, Ser. No. 263,495

Int. Cl. C01b *33/28;* **C10g** *13/02, 37/10*

U.S. Cl. 208—111 **5 Claims**

A light lube suitable for use as a traction fluid is prepared from a gas oil by hydrocracking. The process involves treating the gas oil over a catalyst such as supported nickel-molybdenum, at from 680 to 780° F. and 800 to 2000 p.s.i.g. in the presence of hydrogen to convert the sulfur present to hydrogen sulfide and the nitrogen present to ammonia. The gas oil is then hydrocracked using magnesium zeolite Y containing 0.2 to 2.0 weight percent of a noble metal at from 680 to 780° F. and from 800 to 2000 p.s.i.g. The resulting hydrocrackate is water washed to remove the hydrogen sulfide and ammonia. The portion of the hydrocracking boiling below 650–750° F. is



recycled to the hydrocracker. The higher boiling portion of the hydrocrackate is dewaxed to produce the hydrocracked lube product, useful as a traction fluid.

3,801,498

TETRAMETALLIC HYDROCARBON CONVERSION CATALYST AND USES THEREOF

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 142,079, May 10, 1971, now Patent No. 3,702,294, which is a continuation-in-part of applications Ser. No. 819,114, Apr. 24, 1969, now abandoned, and Ser. No. 807,910, Mar. 17, 1969, now Patent No. 3,740,328. This application Oct. 26, 1972, Ser. No. 301,006

Int. Cl. C10g *35/08;* **B01j** *11/12*

U.S. Cl. 208—139 **26 Claims**

A catalytic composite comprising a combination of a platinum group component, a rhenium component, a Group I–B component and a tin component with a porous carrier material is disclosed. The principal utility of this composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specific example of the disclosed catalytic composite is a combination of a platinum component, a rhenium component, a tin component, a gold component and a halogen component with an alumina carrier material in amounts sufficient to result in a composite containing, on an elemental basis, about 0.01 to 2 wt. percent platinum, about 0.01 to 2 wt. percent rhenium, about 0.01 to 5 wt. percent tin, about 0.01 to about 5 wt. percent gold and about 0.1 to 3.5 wt. percent halogen.

3,801,499

SEWAGE TREATMENT

Egon Luck, 207 Baythorne Drive, Thornhill, Ontario, Canada

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,989

Int. Cl. C02c *1/40*

U.S. Cl. 210—11 **7 Claims**

A method of treating liquid sewage includes precipitating heavy metals from the sewage, which may have been previously settled, filtered or otherwise treated so as to remove a large proportion of the solids content thereof, and raising the pH of the sewage to over 11 and preferably over 12 to destroy pathogenic organisms and to release enzymes from bacteria in the sewage, lowering the pH so that it is in a range in which the enzymes digest components of the sewage, adding microorganisms to the sewage

to assist in decomposing organic components thereof, killing the organisms developed and removing them, neutralizing the sewage solution remaining and removing cations and anions from it with ion exchange resins. The water produced is of drinking water quality and the process by which it is made is appreciably faster than present commercial sewage treatments.

3,801,500
PROCESS FOR FLOCCULATING SOLID PARTICLES FROM AN AQUEOUS SUSPENSION THEREOF
Frederick J. Webb, Akron, and David P. Tate, Northfield, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Original application Aug. 29, 1971, Ser. No. 854,321, now Patent No. 3,647,774, dated Mar. 7, 1972. Divided and this application Sept. 13, 1971, Ser. No. 180,074
The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed
Int. Cl. C08d *5/04;* **C08f** *27/08*
U.S. Cl. 210—54 **3 Claims**

This invention comprises water-soluble polymers from polydienes having a substantial amount of repeating units with pendent vinyl groups, such as high-vinyl polybutadiene, and the process for preparing such water-soluble polymers. The process involves the anti-Markownikoff addition of hydrogen bromide to the pendent vinyl groups to give the primary bromide derivative groups, which upon the addition of a tertiary amine, give quaternary ammonium groups which impart water solubility to the polymers. These products are particularly useful for the flocculation of solids from suspensions thereof, such as elutriated sewage.

3,801,501
METHOD OF PURIFYING WATER
Sterling R. Kennedy, 3460 Hollenberg Drive, Bridgeton, Mo. 63044
No Drawing. Continuation-in-part of abandoned application Ser. No. 206,953, Dec. 10, 1971. This application Feb. 14, 1972, Ser. No. 226,187
Int. Cl. C02b *1/18*
U.S. Cl. 210—59 **17 Claims**

A method of purifying water is provided which is applicable to sewerage or other polluted water to convert it to potable water. The method involves the acidification of the polluted water with a mineral acid such as sulfuric, nitric, hydrochloric, or mixtures thereof, treatment of the mixture with iron to produce an iron salt in situ, followed by neutralization. An iron or aluminum nitrate or sulfate may be added to the mixture when it is treated with the iron.

3,801,502
WATERFLOOD BACTERIAL VISCOSIFIER
Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Sept. 23, 1971, Ser. No. 183,258
Int. Cl. E21b *43/20*
U.S. Cl. 252—8.55 D **2 Claims**

A method of treating fermentation products produced by the fermentation employing the genus Xanthomonas with alcohols, ketones, phenols, and nonionic surfactants to produce substances incorporable in water used in waterflooding to adjust the viscosity thereof.

3,801,503
PNEUMATIC TOOL LUBRICANT
Lester M. Hartmann, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed July 24, 1970, Ser. No. 59,781
Int. Cl. C10m *1/38, 1/48*
U.S. Cl. 252—18 **11 Claims**

A pneumatic tool lubricant comprising a major amount of hydrocarbon lubricating oil and minor amounts of molybdenum disulfide, zinc dialkyldithiophosphate, organic sulfur compound composed only of carbon, hydrogen, sulfur, and oxygen, and a rust inhibitor selected from the group consisting of aliphatic monocarboxylic acids, sulfonic acids, and metal salts thereof.

3,801,504
NON-FLAMMABLE WATER BASED HOT FORGING LUBRICATING COMPOSITIONS
Aubrey L. Stone, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Mar. 22, 1971, Ser. No. 126,892
Int. Cl. C10m *3/04, 3/14, 3/18*
U.S. Cl. 252—23 **9 Claims**

Lubricant composition comprising:

(a) water base,
(b) clay thickener,
(c) graphite,
(d) borax,
(e) sodium metasilicate,
(f) non-clay thickener,
(g) polyalkoxylated alkyphenols.

3,801,505
GREASE COMPOSITION
Van Y. S. Hong, Rock Island, Ill., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed July 25, 1972, Ser. No. 275,025
Int. Cl. C10m *7/18, 7/28*
U.S. Cl. 252—25 **2 Claims**

Grease consising of perfluoroalkylpolyether base oil thickened with polytetrafluoroethylene and containing minor amounts of boron nitride and tungsten disulfide.

3,801,506
WATER-RESISTANT GREASES
Edward A. Cross, Houston, and Gordon S. Bright, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed July 12, 1971, Ser. No. 161,993
Int. Cl. C10m *5/16, 5/20*
U.S. Cl. 252—40 **9 Claims**

This invention concerns the use of polyalkoxylated alkylated phenols and polyalkoxylated alkylene diamines as additives to enhance the water-resistance of greases thickened with lithium soaps or mixtures of lithium soaps and calcium soaps.

3,801,507
SULFURIZED METAL PHENATES
Yngve Gust Hendrickson, El Cerrito, and John M. King, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,863
Int. Cl. C10m *1/54*
U.S. Cl. 252—42 F **13 Claims**

A novel multifunctional lube oil additive is provided and comprising the reaction product of an alkyl phenol having from 8 to 35 carbons in the alkyl group, sulfur and an alkaline earth metal oxide or hydroxide. The reaction is performed in a two step process in the presence of a mutual solvent whereby the sulfurized metal phenate produced has a sulfur to metal atom ratio between about 1 and 2.

3,801,508
METHOD AND COMPOSITION FOR REDUCING THE FRICTIONAL DRAG OF FLOWING FLUIDS
Dale J. Meier, El Cerrito, Calif., and Vitold R. Kruka, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 2, 1971, Ser. No. 204,357
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 **1 Claim**

The flow properties of non-aqueous liquids are improved by the incorporation thereinto of hydrogenated polyisoprene.

3,801,509

INJECTION TYPE QUATERNARY COMPOUND LIGHT EMITTING DIODE

Kazuhiro Kurata, Hachioji, Hiroyuki Kasano, Akishima, and Masahiko Ogirima, Hazime Kusumoto, and Toshimitu Shinoda, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1970, Ser. No. 99,873
Claims priority, application Japan, Dec. 22, 1969, 44/102,498
Int. Cl. H01l *3/20*
U.S. Cl. 252—62.36 A **7 Claims**

An injection type light emitting diode made of a quaternary solid solution of $Ga_{1-x}Al_xAs_{1-y}P_y$ type, where $0<x<1$ and $0<y<1$. In the conventional light emitting diode made of a $G_aAl_{1-x}P_x$ or $Ga_{1-x}Al_xAs(0<x<1)$ type solid solution, the mole fraction x which makes the solid solution of the direct energy band gap type is 0.4 and 0.2 or less, respectively, and the emission peak is at a wavelength longer than 6700 A. and 7000 A., respectively. The emission peak of the diode according to the present invention is at a shorter wavelength than that of the conventional one, and yet the quantum efficiency of the diode according to the present invention is higher than that of the conventional one.

3,801,510

MAGNETIC RECORDING MEMBER COMPRISING ALUMINA COATED CrO_2 PARTICLES

Donald George Pye, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application June 9, 1972, Ser. No. 261,213, now Patent No. 3,736,181, which is a division of application Ser. No. 82,117, Oct. 19, 1970, now Patent No. 3,687,726. Divided and this application Mar. 12, 1973, Ser. No. 340,397
Int. Cl. H01f *10/02*
U.S. Cl. 252—62.54 **2 Claims**

Magnetic recording members comprising CrO_2 particles in a resin binder are rendered more stable against water and organic materials when the individual particles of CrO_2 are provided with a coating of alumina.

3,801,511

SPRAY-DRIED DETERGENT COMPOSITION

Theodore C. Lemoff, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,964
Int. Cl. C11d *3/10, 3/20, 17/06*
U.S. Cl. 252—135 **6 Claims**

A spray-dried detergent composition is produced by a method whereby the resultant composition is in the form of crisp, free-flowing granules. The method comprises first forming an aqueous slurry of sodium carbonate, a water-soluble detergent, and as an anti-caking agent, a water-soluble compound having a greater solubility in water than does the sodium carbonate. The resultant slurry is thereafter spray dried to produce the crisp, free-flowing granules. The water-soluble compound when added to the slurry prior to spray drying imparts to the resultant composition the desired physical properties.

3,801,512

STABILIZED ACIDIC HYDROGEN PEROXIDE SOLUTIONS

John Carl Solenberger, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,219
Int. Cl. C01b *15/02;* **C23f** *1/00*
U.S. Cl. 252—186 **17 Claims**

Stabilizers are provided for hydrogen peroxide in aqueous solution of up to 80 percent hydrogen peroxide by weight and in acidic solution containing up to about 5 percent hydrogen peroxide by weight, up to 85 percent inorganic acid by weight, up to 5 percent metal ions by weight, and at temperatures up to 90° C. Such stabilizers are included in concentrations up to about 5 percent, preferably up to about 1 percent, by weight, as required, depending on the concentrations of hydrogen peroxide, acid, and metal ions present. The stabilizers include certain substituted anilines, aromatic sulfonic acids, sulfamic acid, sulfolenes, sulfolanes, sulfoxides and sulfones, and mixtures thereof.

3,801,513

CARBON CONTAINING MOLECULAR SIEVES

Heinrich Munzner, Essen-Kray, Heinrich Heimbach, Bochum, Werner Korbacher, Essen-Borbeck, Werner Peters, Wattenscheid, Harald Juntgen, Essen-Heisingen, Karl Knoblauch, Essen, and Dieter Zundorf, Essen-Heisingen, Germany, assignors to Bergwerksverband GmbH, Essen-Kray, Germany

Filed July 9, 1971, Ser. No. 161,211
Claims priority, application Germany, Apr. 23, 1971, P 21 19 829.8
Int. Cl. C01b *31/08, 31/16*
U.S. Cl. 252—421 **10 Claims**

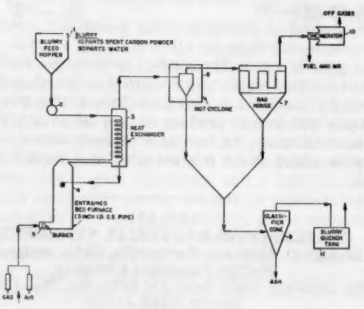
Process for preparing carbon containing molecular sieves adapted for separating small molecular gases in particular oxygen from nitrogen which comprises treating coke having a content of volatile components of up to 5% at 600–900° C. with a carbonaceous substance which splits off carbon whereby the split-off carbon is deposited in the carbon framework of the coke under narrowing of the existing pores.

3,801,514

PROCESS FOR REGENERATING SPENT ACTIVE CARBON IN A SUSPENSION-DISPERSION-TRANSPORT SYSTEM

Robert T. Joseph, Richboro, Pa., assignor to FMC Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 812,465, Apr. 1, 1969, which is a continuation-in-part of application Ser. No. 651,423, July 6, 1967, both now abandoned. This application June 9, 1971, Ser. No. 151,550
Int. Cl. B01j *11/02;* **C01b** *31/08*
U.S. Cl. 252—420 **6 Claims**



Spent active carbon, recovered from secondary sewage treatment and from beer and sugar refining, is regenerated by rapidly heating it in the dispersed phase in the presence of an activating atmosphere. The activating gases are preferably steam or carbon dioxide or both.

3,801,515

CATALYST AND PREPARATION METHOD FOR SAID CATALYST

Lloyd J. Olson, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 4, 1972, Ser. No. 250,400
Int. Cl. B01j *11/40*
U.S. Cl. 252—453 **6 Claims**

This invention is concerned with catalysts, particularly those useful for hydroconversion, preferably hydro-

cracking, a process for using the catalyst, and a method for manufacturing the catalyst, which comprises:

(A) forming in an aqueous medium a gelatinous precipitate and a finely divided catalytically active metal, the gelatinous precipitate comprising an inorganic oxide or precursor thereof and the metal being formed by reduction in the aqueous medium of a metal compound dissolved therein;
(B) intimately intermixing the gelatinous precipitate and the metal within two hours of formation of the gelatinous precipitate, thereby forming a catalyst precursor;
(C) converting the catalyst precursor to a catalyst. The conversion includes at least a step of heating the catalyst precursor at 500–1800° F. for 1 to 48 hours.

The preferred catalyst comprises a noble metal, preferably palladium on a silica-alumina support, particularly useful for hydrocracking processes.

3,801,516

SUBSTANTIALLY NEUTRAL PLATINUM SERIES CATALYST

Bernard Juguin and Jean Francois Le Page, Rueil Malmaison, and Jean Miquel, Paris, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants

No Drawing. Filed May 17, 1971, Ser. No. 144,227

Claims priority, application France, May 27, 1970, 19,479

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **7 Claims**

The catalyst of this invention comprises alumina, a Group VIII metal and a Group VI metal; its specific surface is 20–150 $m.^2/g.$ and its neutralization heat by ammonia adsorption is lower than 10 calories per gram at 320° and 300 mm. Hg. It may be used for dehydrogenating saturated hydrocarbons.

3,801,517

REDUCTION OF CORROSIVITY OF HALOGEN CONTAINING POLYMER VULCANIZATES

John R. Richwine, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed June 1, 1972, Ser. No. 258,702

Int. Cl. C23f *15/00*

U.S. Cl. 260—2 A **9 Claims**

The corrosive effects of halogen-containing polymer vulcanizates can be inhibited by the addition of a small amount of the mixture of (1) at least one corrosion inhibiting agent having the general formula

$$(R)_n—A—(COOM)_m$$

where each R independently is selected from alkyl, aryl, cycloalkyl, alkoxy, hydroxy, halo, nitro, amino, thio, and ester radicals; A is selected from the group of polyvalent aromatic radicals derived by the removal of a number of hydrogen atoms equal to the sum of n plus m from phenyl, naphthyl, benzophenone, biphenyl, alkylphenyl and alkenylphenyl radicals; M is selected from H, $NH_xR'_y$ where R′ is lower alkyl, x is an integer from 2 to 4, y is an integer from 0 to 2 and $x+y=4$, and metals selected from Groups II–A, II–B, IV–A and VIII of the Periodic Chart of Elements; n is an integer from 0 to 3; and m is an integer from 1 to 2; and (2) at least one lead compound selected from the lead salts of aliphatic carboxylic acids, lead salts of aromatic carboxylic acids, lead salts of carbonic acid, lead salts of phosphorous acid, lead salts of silicic acid and lead oxides.

3,801,518

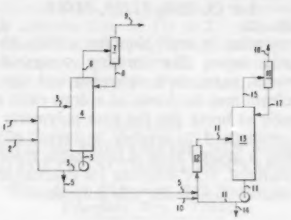
FLEXIBLE POLYURETHANE FOAM HAVING IMPROVED COMPRESSION SET

Carl Francis Irwin, New Castle, and Harry Walter Wolfe, Jr., Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 137,142, Apr. 26, 1971. This application Feb. 28, 1972, Ser. No. 230,118

Int. Cl. C08g *22/44, 53/10*

U.S. Cl. 260—2.5 AT **3 Claims**



Process for producing an improved undistilled tolylene diamine phosgenation product, having an amine equivalent of about 90–125, by mixing tolylene diamine and phosgene at an elevated temperature until the amine is substantially all converted to isocyanate and adjusting the acidity of said undistilled phosgenation product until the acidity of the undistilled product is in the range of about 0.03–0.3 weight percent. The phosgenation product may be used effectively as an element in a highly resilient polyurethane foam.

It is preferred to adjust the acidity of the undistilled product by maintaining said product in a phosgenation atmosphere at a temperature of about 100–200° C. for at least about 0.08 hour, preferably 0.08–2 hours.

3,801,519

AQUEOUS SUSPENSION POLYMERIZATION IN THE PRESENCE OF C_3–C_4 HYDROXYALKYL CARBOXYMETHYL CELLULOSE ETHERS AS DISPERSING AGENTS

Terry A. Brodof, Lincroft, N.J., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,389, Dec. 21, 1970. This application Sept. 21, 1972, Ser. No. 290,890

Int. Cl. C08f *1/09, 1/11*

U.S. Cl. 260—17 R **3 Claims**

C_3–C_4 hydroxyalkyl carboxymethyl cellulose ethers having a C_3–C_4 hydroxyalkyl MS of from about 0.2 to 2.5 and a carboxymethyl DS of from about 0.1 and 0.9 are superior protective colloids in the non-emulsified aqueous suspension polymerization of vinyl chloride.

3,801,520

CARBON DIOXIDE AND WATER TREATMENT OF COUPLED LITHIUM INITIATED POLYMER

John Paul Hogan, Alonzo G. Kitchen, and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,818

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—23.7 R **14 Claims**

The effluent from a lithium initiated polymerization, wherein a coupling agent is utilized to join two or more polymer molecules together, with the resulting generation of LiO—, LiS—, or

$$\begin{matrix} \text{II} \\ \text{LiN—} \end{matrix}$$

groups is treated with carbon dioxide and water to improve the color and maintain low haze of the resulting polymer.

3,801,521

SPINNABLE COMPOSITIONS OF NYLON AND A FATTY DIAMIDE, AND DRAWN ARTICLES SPUN THEREFROM

Walter J. Smith, Hopewell, Va., and John R. Bukey, Pottstown, Pa., assignors to The Firestone Tire & Rubber Company

No Drawing. Continuation of application Ser. No. 743,646, July 10, 1968, which is a division of application Ser. No. 483,318, Aug. 27, 1965, both now abandoned. This application Apr. 24, 1972, Ser. No. 247,061

Int. Cl. C08g *51/00, 51/44*

U.S. Cl. 260—28 13 Claims

By incorporating by melt-blending certain diamides in predominantly nylon fiber-forming compositions, the fibers, filaments, yarn, cord, strapping and the like produced therefrom may be drawn at a draw ratio exceeding the draw ratio at break for the base polymeric material. The tensile strength of the product, as a result of the drawing operation, is greater than is obtainable from the base polymeric material. N,N'-ethylene bis-stearamide is a particularly suitable diamide for this purpose.

3,801,522

COATING COMPOSITION OF A SILICONE FLUID, A SILICONE RESIN AND A ZIRCONIUM SILICATE HARDENING AGENT

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,409

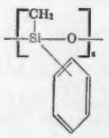
Int. Cl. C08g *47/02, 51/26, 51/74*

U.S. Cl. 260—29.1 R 7 Claims

The coating composition comprises a binder of

(1) 0.5–20% by weight of a dimethyl polysiloxane fluid; and correspondingly,

(2) 99.5–80% by weight of a heat curable structure polysiloxane resin having the repeating structural formula



and a finely divided inorganic hardening agent, such as zirconium silicate, zirconium oxide or silicone dioxide or mixtures thereof; optionally heat stable pigments, filler pigments and reinforcing pigments, such as aluminum flake, potassium titanate fibrils, and the like can be added;

the novel composition forms finishes that have excellent release and hardness properties, excellent adhesion to unprimed metal substrates and excellent abrasion resistance, and are used as finishes for cooking vessels, such as fry pans and bakeware.

3,801,523

PROCESS FOR PREPARING SYNTHETIC LATEX

Eiichiro Shiratsuchi and Eijiro Tagami, Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 10,012, Feb. 9, 1970. This application Aug. 18, 1971, Ser. No. 172,937

Int. Cl. C08f *1/13*

U.S. Cl. 260—29.6 RW 8 Claims

A synthetic latex is prepared by the emulsion polymerization of an ethylenically unsaturated monomer in 100–300 parts by weight of an aqueous alkaline solution containing 2–20% by weight of a copolymer in the presence of a free radical initiator to form 100–200 parts by weight of polymer of the ethylenically unsaturated monomer, the copolymer being composed of not lower than 7% by weight and less than 20% by weight of an ethylenically unsaturated monobasic carboxylic acid having not higher than 10 carbon atoms and the remaining percentage of a monomer copolymerizable therewith, and having intrinsic viscosity of less than 0.2 determined in dimethyl formamide as solvent at 25° C.

3,801,524

ENTROPICALLY STABILIZED WATER BASE DISPERSIONS

Fred Walter Parker, Rochester, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 139,203, Apr. 30, 1971, now Patent No. 3,729,439. This application Dec. 18, 1972, Ser. No. 316,405

Int. Cl. C08f *37/00, 15/40*

U.S. Cl. 260—29.6 WB 10 Claims

Graft copolymers having graft segments which contain hydroxy terminated acrylic monomers which enable the copolymer to form water base dispersions which are useful as finishes for automobile and truck bodies.

3,801,525

EPITHIOAMIDES AS PLASTICIZER-STABILIZERS

Frank C. Magne, Robert R. Mod, and Gene Sumrell, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Aug. 31, 1971, Ser. No. 176,622

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—30.2 4 Claims

N-(9,10-epithiostearoyl)morpholine, N,N-dibutyl-9,10-epithiostearamide and epithio soybean oil are disclosed as thermal-stabilizers for polyvinyl chloride compositions which have better compatibility characteristics with polyvinyl chloride compositions than the analogous expoxides.

3,801,526

PLASTICIZED VINYL CHLORIDE POLYMER BLENDS HAVING IMPROVED FIRE RETARDANCY

Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 713,310, Mar. 15, 1968. This application Nov. 30, 1970, Ser. No. 93,858

Int. Cl. C08f *45/30, 45/50;* C09k *3/28*

U.S. Cl. 260—30.6 R 11 Claims

Plasticizer compositions and improved fire retardant, plasticized low-temperature flexible, high tensile propertied vinyl chloride polymer blends containing such compositions, as well as sheets and films made therefrom. These plasticizer compositions employ a combination of two different halogenated hydrocarbons and two different trisubstituted organo phosphates.

3,801,527

FLAME RETARDING ANTIMONY COMPOUNDS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Nov. 30, 1970, Ser. No. 93,864, now Patent No. 3,728,367. Divided and this application Oct. 10, 1972, Ser. No. 295,870

Int. Cl. C08f *45/62;* C08g *51/62*

U.S. Cl. 260—30.8 DS 13 Claims

Solutions of monomeric trivalent antimony-tartaric acid compounds having a molar ratio of antimony to tartaric acid of 1 to 1 to 2 to 1 stabilized with an anion such as chloride in certain polar organic solvents are useful for incorporating flame-retarding antimony compounds into polymeric articles.

3,801,528

NOVEL POLYMERS AND DOPES OF AROMATIC POLYAMIDES CONTAINING A STILBENE RADICAL

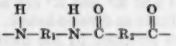
Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,288

Int. Cl. C08g *51/44, 51/46, 51/50*

U.S. Cl. 260—308 R **4 Claims**

Novel film- and fiber-forming aromatic polyamides and copolyamides consisting essentially of repeating units of the formula



wherein R_1 represents a radical selected from the group of 1,4 - phenylene; methyl - 1,4-phenylene; chloro-1,4-phenylene; bromo-1,4-phenylene; fluoro - 1,4-phenylene; 4,4'-biphenylene; 3,3'-dimethyl-4,4' - biphenylene; 3,3'-dichloro-4,4' - biphenylene; and 1,4-, 1,5- and 2,6-naphthylene; and R_2 represents the 4,4'-trans-stilbenylene radical, with the proviso that up to about 70 mole percent, preferably up to about 50 mole percent, of the 4,4'- trans-stilbenylene radicals may be replaced by rigid radicals selected from the group of 1,4-phenylene, chloro-1,4-phenylene, and 2,5-pyridylene. Anisotropic dopes may be formed from such polymers.

3,801,529

BLOCK COPOLYMER-POLYVINYL CHLORIDE COMPOSITIONS

Richard C. Potter, Modesto, Calif., assignor to Shell Oil Company

No Drawing. Continuation of abandoned application Ser. No. 94,550, Dec. 2, 1970. This application Feb. 12, 1973, Ser. No. 331,917

Int. Cl. C08f *45/50*

U.S. Cl. 260—30.6 R **3 Claims**

The processability of polyvinyl chloride resins is substantially improved by blending therewith a minor proportion of certain block copolymers, the two components having improved compatibility by the presence of certain monomeric plasticizers having a solubility parameter between about 8.0 and 11.0.

3,801,530

STABILIZED POLYALKYLENE RESIN COMPOSITION AND PROCESS FOR MAKING SAME

William T. Freed, Madison, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,429

Int. Cl. C08g *17/40*

U.S. Cl. 260—32.6 R **30 Claims**

The present invention relates to the stabilized compositions of polyalkylene terephthalate resins. More particularly, the present invention relates to the retention of color and physical properties even after high temperature oven-aging of both reinforced and unreinforced polypropylene terephthalate and polybutylene terephthalate molding resins by the addition of a substituted or unsubstituted alkylene bis stearamide.

3,801,531

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Anthony J. Berejka, Cranford, and Leonard H. Drexler, Rahway, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,413

Int. Cl. C08c *11/28;* **C08d** *5/02*

U.S. Cl. 260—33.4 PQ **8 Claims**

Pressure sensitive adhesives are made from olefinically unsaturated elastomers or blends of two or more such elastomers, containing between about 0.1 and about 3.5 mol percent of sulfo or thiouronium groups, either unneutralized, partially, or fully neutralized with organic amines or inorganic bases, which can be admixed with normally liquid, but viscous, or solid, conventional tackifiers, i.e. low molecular weight polyisobutylene, polybutenes, rosin esters, hydrogenated rosin methyl esters, petroleum resins, etc. in an amount between about 10 and about 150 phr. These adhesives can be dissolved at about 10 to about 30 wt. percent total solids in conventional organic solvents, e.g. toluene plus isopropyl alcohol, and applied to sheets or tapes of cloth, plastics, cellophane, paper, polyester films, etc. and dried to remove solvent leaving an adhesive film of 1.0 to 2.5 mils in thickness. Pressure sensitive adhesive tapes and sheetings having an excellent balance of hold and tack properties and having good resistance to cold flow are produced.

3,801,532

RAPID-SETTING POLYURETHANES FROM DIOLS AND POLYFUNCTIONAL ISOCYANATES

Franciszek Olstowski, 912 North A, Freeport, Tex. 77541

No Drawing. Continuation-in-part of abandoned application Ser. No. 205,697, Dec. 7, 1971. This application May 7, 1973, Ser. No. 358,245

Int. Cl. C08g *22/04*

U.S. Cl. 260—33.8 UB **9 Claims**

Mixtures comprising a low molecular weight diol, a liquid modifier compound having a boiling point above about 150° C., such as a halogenated aliphatic compound, a polyisocyanate having a functionality of at least about 2.5 and an organometallic catalyst instantly set, after a brief induction period, to a solid, dense, rigid polymeric product which can be demolded within a period of from less than 1 minute to about 5 minutes.

3,801,533

FLAME RETARDANT POLYAMIDE COMPOSITIONS

Marvin T. Tetenbaum and Herman Stone, Convent, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 180,474, Sept. 14, 1971. This application June 8, 1972, Ser. No. 260,949

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.8 N **15 Claims**

Certain substituted sulfonyl imide compounds impart flame retardance when blended with polyamides.

3,801,534

ANTI-FOULING COATING COMPOSITION

Ronald W. Beers, Spring, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,561

Int. Cl. C08g *51/04;* **C09d** *5/14*

U.S. Cl. 260—37 EP **13 Claims**

Effective marine antifouling coatings are secured by admixing an epoxy resin/curing agent vehicle with zinc, zinc oxides or mixtures thereof in combination with an organotin or organoarsenic toxicant. The coating composition may be employed as a solvent or solventless system. The preferred coating system is made up of an epoxy resin/polyamide vehicle admixed with zinc dust and 10, 10'-oxybisphenoxarsine, tri-n-butyltin fluoride or mixtures thereof. Desirably, the zinc reagent and the organoarsenic and/or organotin antifoulant makes up from 55 to 75 volume percent of the total vehicle, zinc reagent and organometallic antifoulant composition.

3,801,535
DAMPING MEANS

Günter Joschko, Berlin, Germany, assignor to Telefunken Patentverwertungsgesellschaft G.m.b.H., Ulm (Danube), Germany

No Drawing. Continuation-in-part of application Ser. No. 881,617, Dec. 2, 1969. This application June 8, 1972, Ser. No. 261,085

Claims priority, application Germany, Dec. 2, 1968, P 18 12 057.5

Int. Cl. C08g *51/22*; H04r *1/16*

U.S. Cl. 260—29.1 SB **25 Claims**

Solid silicones having a Shore A hardness of much less than 15 at a temperature below 50° C. damp mechanical vibrations and are particularly useful in this regard for sound pickups.

3,801,536
HARDENABLE COMPOSITION WITH RESINOUS BINDER CONTAINING SPHEROIDAL MICRONIC INORGANIC PARTICLES

Jean Guenantin, Apt. 305, Residence Gallardon, 37 Chambray-les-Tours, France

Continuation-in-part of application Ser. No. 826,125, May 10, 1969. This application Nov. 29, 1971, Ser. No. 202,807

Claims priority, application France, May 22, 1968, 152,731

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **15 Claims**

A hardenable composition consisting of a binder component, and an aggregate component, the binder component consisting essentially of a synthetic-resin matrix in which a micronic inorganic constituent with a particle size substantially less than two microns is distributed in the binder component, is of a constant viscosity by virtue of the presence of about 30% spheroidal grains in the inorganic constituent. The binder is present in an amount of 2 to 13% by weight of the total composition and the inorganic constituent is present in an amount of 25 to 75% by weight of the binder component.

3,801,537
PROCESS FOR IMPROVING PROPERTIES OF VULCANIZED ELASTOMERS

Hermann Westlinning, Kleinostheim, Siegfried Wolff, Cologne, and Werner Schwarze, Frankfurt, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

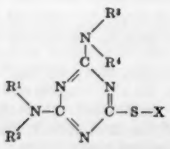
No Drawing. Application Mar. 8, 1971, Ser. No. 122,190, which is a continuation-in-part of abandoned application Ser. No. 715,541, Mar. 25, 1968. Divided and this application Jan. 30, 1973, Ser. No. 328,107

Claims priority, application Germany, Mar. 23, 1967, D 52,613

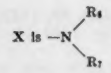
Int. Cl. C07d *55/20*; C08c *11/18, 11/60*

U.S. Cl. 260—42.33 **5 Claims**

Vulcanizable elastomeric compositions in which the rubber is a halogen-free polymer and which contain at least one reinforcing filler and sulfur are vulcanized in the presence of an effective amount of at least one substituted s-triazine compound adapted to modify the reinforcing effect of the filler, the said s-triazine compound having the formula



wherein R^1, R^2, R^3 and R^4 may be hydroxy or cyano or hydrogen or one of the organic radicals further defined in the specification and



wherein R is alkyl and R^6 and R^7 are also radicals, principally organic radicals as defined below.

The vulcanizates obtained by the method of the invention are distinguished by longer Mooney scorch times, higher tensile strength and a higher modulus, particularly at 300% elongation, as well as other favorable properties.

3,801,538
STABILIZED CATHODE RAY-SENSITIVE COATING FILM

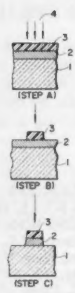
Hajime Morishita, Tokyo, Takako Hirai, Koganei, and Saburo Nonogaki, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 30, 1972, Ser. No. 268,110

Claims priority, application Japan, July 2, 1971, 46/48,558

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **24 Claims**



A coating film for forming a desired pattern by being exposed to a cathode ray in accordance with the desired pattern, said film being particularly useful as a resist mask in the manufacturing process of an integrated circuit and adapted to be hardened by cathode ray exposure. This coating film is characterized in that it is made of a matrix of an organic polymer having at least three epoxy groups within a molecule, and the polymer matrix contains an electrolyte such as a quaternary alkyl ammonium compound; a halide, hydroxide or carbonate of an alkali metal. The presence of the electrolyte material is effective for keeping the film in a chemically stable state over a long period of time, and also for recording a cathode ray image at high clarity, so that it is very effective for improving the well-known cathode ray-sensitive coating film made of the organic polymer bearing epoxy groups within a molecule.

3,801,539

COBALT DICYCLOHEXYLDITHIOPHOSPHINATE STABILIZATION OF POLYOLEFINS

Houston George Brooks, Jr., Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 1, 1971, Ser. No. 185,877, now Patent No. 3,755,396, dated Aug. 28, 1973. Divided and this application Feb. 20, 1973, Ser. No. 334,188

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 R 3 Claims

A new compound, cobalt dicyclohexyldithiophosphinate, is disclosed. It is useful for stabilizing polyolefins against deterioration by light and heat.

3,801,540

DIALKYLHYDROXYPHENYLALKANOIC ACID ESTERS OF DI- AND TRIPENTAERYTHRITOL USEFUL AS POLYMER ANTIOXIDANTS

Martin Dexter, Briarcliff Manor, John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Greenburg, N.Y.

No Drawing. Application June 30, 1969, Ser. No. 837,958, now Patent No. 3,642,868, which is a continuation-in-part of application Ser. No. 502,587, Oct. 22, 1965, which is a continuation-in-part of application Ser. No. 359,460, Apr. 13, 1964, which is a continuation-in-part of application Ser. No. 276,192, Apr. 29, 1963, which is a continuation-in-part of application Ser. No. 164,618, Jan. 5, 1962, which in turn is a continuation-in-part of application Ser. No. 148,738, Oct. 30, 1961, all now abandoned. Divided and this application May 21, 1971, Ser. No. 145,969

Int. Cl. C08f 45/58

U.S. Cl. 260—45.85 B 10 Claims

Esters of dipentaerythritol or tripentaerythritol and 4-hydroxy-5-alkylphenylalkanoic acids having a second alkyl group in the 2 or 3 position of the phenyl ring are stabilizers of organic material. The compounds are obtained through transesterification techniques.

3,801,541

THERMAL STABILIZATION OF ACRYLIC POLYMERS

George Henry Hofmann, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 147,631, May 27, 1971. This application Feb. 7, 1973, Ser. No. 330,388

Int. Cl. C08f 45/58

U.S. Cl. 260—45.85 H 14 Claims

Improved thermal stability of methyl methacrylate homopolymers and methyl methacrylate copolymers is achieved by adding to the polymer a small amount of pentaerythritol tetrakis (thioglycolate), trimethylol propane tris(thioglycolate) or trimethylol ethane tris(thioglycolate).

3,801,542

BIS(α,β-DIHALOALKYL) 1-ACYLOXYALKANE PHOSPHONATE FLAME RETARDANTS

Arthur D. F. Toy, Stamford, Conn., and Eugene A. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

No Drawing. Original application June 10, 1971, Ser. No. 151,953. Divided and this application Apr. 23, 1973, Ser. No. 353,872

Int. Cl. C08f 45/58; C08g 51/58; C09b 27/66

U.S. Cl. 260—45.85 R 8 Claims

The new compounds, bis(α,β-dihaloalkyl) 1-acyloxyalkanephosphonates, and particularly bis(2,3-dihalopropyl) 1-acyloxyalkanephosphonates are disclosed which have been found to be effective flame retardants in various polymer compositions such as polymethyl methacrylate and polystyrene.

3,801,543

HINDERED PHENOLIC PHOSPHORODITHIOATE ANTIOXIDANTS FOR SBR POLYMERS

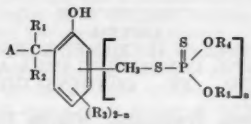
Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Application Oct. 29, 1968, Ser. No. 771,656, now Patent No. 3,662,033, which is a continuation-in-part of abandoned application Ser. No. 707,428, Feb. 23, 1968. Divided and this application Jan. 20, 1972, Ser. No. 219,509

Int. Cl. C08d 7/10

U.S. Cl. 260—45.95 C 7 Claims

Styrene-butadiene rubber is stabilized by addition of a compound having the formula:



wherein A is an aryl radical containing from 6–18 carbon atoms, R_1 is a lower alkyl radical containing from 1–3 carbon atoms, R_2 is selected from hydrogen and lower alkyl radicals containing from 1–3 carbon atoms, R_3 is selected from the group consisting of alkyl radicals containing from 1–20 carbon atoms, cycloalkyl radicals containing from 6–20 carbon atoms and radicals having the formula:

wherein A, R_1 and R_2 are the same as above; R_4 and R_5 are independently selected from the group consisting of alkyl radicals containing from 1–50 carbon atoms and aryl radicals containing from 6–20 carbon atoms, and n is 1 or 2. An example is S-[3,5-di-(α-methylbenzyl)-4-hydroxybenzyl]-O,O-di-(C_{20-50} primary alkyl) phosphorodithioate. A process of making the compounds by the reaction of 3,5-di-hydrocarbyl-4-hydroxybenzyl halide with an O,O-di-hydrocarbyl dithiophosphoric acid in the presence of an alkali metal base or an alkaline earth metal base is also disclosed.

3,801,544

HYDROGEN-FUNCTIONAL ORGANOPOLYSILOXANES

Alan E. Mink and Darrell D. Mitchell, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Mar. 8, 1972, Ser. No. 232,962, now Patent No. 3,732,330. Divided and this application Jan. 2, 1973, Ser. No. 320,397

Int. Cl. C07f 7/02

U.S. Cl. 260—448.2 H 2 Claims

Trimethylsilyl-terminated methylhydrogensiloxy diphenylsiloxy copolymers containing from about 20 to 45 mol percent diphenylsiloxy units give increased strength and flexibility when used as the curing agent for vinyl-functional organopolysiloxanes.

3,801,545

SOLUBLE AROMATIC POLYAMIDES AND FILAMENTS WITH A HIGH MODULUS OF ELASTICITY PRODUCED FROM THEM

Hans Egon Kunzel, Dormagen, Gunter Blankenstein, Stommeln, Francis Bentz, Cologne, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 1, 1972, Ser. No. 285,578

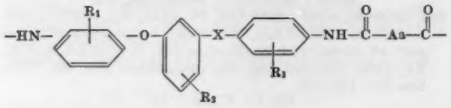
Claims priority, application Germany, Sept. 3, 1971, P 21 44 126.9

Int. Cl. C08g 20/20

U.S. Cl. 260—47 CZ 3 Claims

The invention relates to high molecular weight aromatic polyamides with a relative solution viscosity η_{rel}

measured in a 0.5% solution in N-methylpyrrolidone at 25° C. of between 1.7 and 3.2, consisting of recurrent structural units of the general formula



in which X, R_1, R_2, R_3 and Ar have the meaning as defined in the specification of the application.

3,801,546

MANUFACTURE OF TEXTILE FINISHING AGENTS COMPRISING CONDENSING UREA AND HCHO FOLLOWED BY CONDENSATION WITH GLYOXAL

Harro Petersen, Frankenthal, Wilhelm Ruemens and Heinz Bille, Limburgerhof, and Guenter Reuss, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,444
Claims priority, application Germany, Mar. 3, 1972, P 22 10 283.6
Int. Cl. C08g *9/10*
U.S. Cl. 260—69 R **9 Claims**

Manufacture of stable liquid shrink and wrinkle resist finishes for cellulosic textiles by condensing urea and formaldehyde in aqueous solution at a molar ratio of from 1:2 to 1:10 in a first stage at pH's of from 7 to 10, in a second stage at pH's of from 3.1 to 5 and in a third stage at pH's of from 6 to 7, sufficient quantities of glyoxal and additional urea and, if necessary, additional formaldehyde being added at the commencement of the third stage to give a total molar ratio of urea to formaldehyde to glyoxal of 1:1.5 to 2.5:0.0.3 to 0.6.

3,801,547

SOLID PHASE POLYCONDENSATION PROCESS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,444
Int. Cl. C08g *17/003*
U.S. Cl. 260—75 M **11 Claims**

A process for preparing segmented thermoplastic copolyesters of sufficiently high molecular weight so that the inherent viscosity of the copolyester is at least about 1.2 measured in m-cresol at 30° C., wherein solid particles of the partially polymerized copolyester having an inherent viscosity of at least about 0.8, preferably in the form of granules of about 5 to 20 mesh, are heated to a temperature of about 140–220° C. The heating takes place in an inert gas stream or in vacuum, for a period of 1 to 72 hours.

3,801,548

POLYURETHANES AND DIISOCYANATO SULFONE AND DIAMINO SULFONE INTERMEDIATES

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application May 6, 1969, Ser. No. 822,302, now abandoned. Divided and this application Apr. 14, 1972, Ser. No. 244,273
Int. Cl. C08g *22/20*
U.S. Cl. 260—77.5 AT **7 Claims**

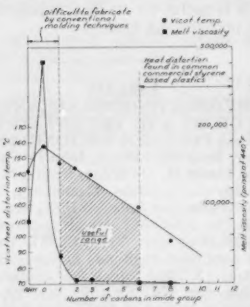
Polyurethane prepolymer and polyurethane coatings are prepared by reacting under prepolymer forming conditions a new diisocyanato sulfone with a polyol. Importantly, the diisocyanato sulfones which are used as starting material have a relatively low toxicity because they are possessed of relatively low volatility.

3,801,549

LOW MELT VISCOSITY MOLDING PROCESS FOR HIGH HEAT DISTORTION INTERPOLYMERS

Eugene R. Moore and Linton E. Smith III, Midland, and Dale M. Pickelman, Auburn, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 836,981, June 26, 1969. This application Oct. 17, 1972, Ser. No. 298,418
Int. Cl. C08f *19/02, 27/08, 47/00*
U.S. Cl. 260—78 UA **10 Claims**


difficult to fabricate by conventional molding techniques
vicat temp.
melt viscosity
heat distortion found in common commercial styrene based plastics
useful range
Number of carbons in imide group

The improvement of this invention is a result of modifying the flow behavior of alkenyl aromatic thermoplastic interpolymers to provide both high heat distortion and low melt viscosity. The modification is the result of introducing into the interpolymer about 5 to 50 mole percent of N-alkyl dicarboxylic imide groups where the alkyl group contains from 1 to 6 carbon atoms.

3,801,550

INTERPOLYMERS OF VINYL FLUORIDE, VINYL ESTERS AND UNSATURATED CARBOXYLIC ACIDS

Robert Leonard Adelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 166,624, July 27, 1971. This application Aug. 9, 1972, Ser. No. 279,272
Int. Cl. C08f *15/40*
U.S. Cl. 260—78.5 R **21 Claims**

Interpolymers containing about 10 to 83% vinyl fluoride, about 17 to 90% vinyl ester, and about 0.1 to 12% of a polymerizable, olefinically unsaturated carboxylic acid having an acidity constant (pKa) of from about 1 to about 5.5, the total vinyl fluoride-vinyl ester content being at least about 78%, are described. An internally plasticizing monomer also may be incorporated in amounts from 0 to 22% of the terpolymer. These interpolymers are soluble or dispersible in common organic solvents to provide easily applied surface coatings or paints having good weatherability; impact strength; toughness; chemical, abrasion and print resistance; unexpectedly good wet adhesion to wood and phosphatized steel; superior gloss and electrical properties; and which can be highly pigmented without adversely affecting their thermal stability. A method for making the new polymers is also described.

3,801,551

MAKING FIBRILLAR MASSES OF ACIDIC COPOLYMERS

Reinhard D. Bohme, Burr Ridge, Ill., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 5, 1972, Ser. No. 269,221
Int. Cl. C08f *27/00*
U.S. Cl. 260—80.8 **15 Claims**

Fibrillar masses of acidic thermoplastic copolymers are obtained by digesting structured granules thereof in aqueous alkali. Granules from die orifice extruded strands of

solid copolymer of ethylene and 16 weight percent acrylic acid, heated in dilute aqueous potassium hydroxide at 90° C., separate into masses of loose, fluffy fibrils.

3,801,552

POLYMERIZATION PROCESS FOR PREPARING FLUOROELASTOMER

Yutaka Kometani, Toyonaka, Naoya Nakamura, Settsu, Shinichi Nakagawa, Osaka, Yasuyoshi Furukawa, Neyagawa, Masayasu Tomodo, Takatsuki, Masahiko Oka, Settsu, Tsuneo Nakagawa, Kyoto, and Yasuo Miyata, Settsu, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,424
Claims priority, application Japan, Dec. 30, 1970, 46/126,353; Nov. 30, 1971, 46/96,521
Int. Cl. C08f *1/11, 1/60, 15/40*
U.S. Cl. 260—80.77 11 Claims

A fluoroelastomer having excellent elastomeric property, lower Mooney viscosity and smaller compression set is economically prepared by subjecting tetrafluoroethylene, vinylidene fluoride and hexafluoropropene to the suspension polymerization in an aqueous medium containing at least one of the said monomers and halogenated hydrocarbons which appear as a liquid in the ratio of 10 to 100% by weight to the existing water in the presence of an oil-soluble initiator at 1° to 45° C. under 1 to 30 kg./cm.² G.

3,801,553

ANTISTATIC ACRYLIC SYNTHETIC FIBERS AND A PROCESS FOR THE MANUFACTURE THEREOF

Hiroyuki Yamaguchi, Kyoto, and Shigeyuki Komure, Ibaraki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of abandoned application Ser. No. 887,215, Dec. 22, 1969. This application Oct. 5, 1971, Ser. No. 186,810
Claims priority, application Japan, Dec. 20, 1968, 43/93,139
Int. Cl. C08f *29/52, 45/00*
U.S. Cl. 260—79.3 MU 13 Claims

An acrylic synthetic fiber comprising at least 70% by weight acrylonitrile and from 2 to 10% by weight of at least one polyalkylene ether derivative represented by the formula:

$$R-\left[\left[X-\left(CH_2-CHR'-O\right)_n-H\right]\right]_m$$

wherein R is a hydrophobic organic radical of from 6 to 40 carbon atoms derived from a compound having a —OH or a —COOH group by removing said —OH or said —COOH group; R' is hydrogen or methyl; X is O or COO; *n* is an integer larger than 2 and *m* is an integer of from 1 to 6. Also disclosed is a process for making such acrylic synthetic fibers comprising wet-spinning a polymer comprising at least 70% acrylonitrile into filaments, contacting the resulting filaments with the above-identified polyalkylene ether derivative with an amount of the derivative, based on the dry weight of the fibers, larger than that amount of the derivative, based on the dry weight of the fibers, which remains in the fibers after the fibers have been treated in boiling water for at least one hour.

3,801,554

LITHIUM ALKENOXIDES AS MODIFIERS IN ORGANOLITHIUM INITIATED POLYMERIZATION

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,099
Int. Cl. C08d *1/32*; C08f *19/08*
U.S. Cl. 260—83.7 14 Claims

Addition of lithium salts of alkenols to polymerization systems initiated with lithium based initiators results in polymers with broadened molecular weight distribution and hence with improved processability.

3,801,555

MASS POLYMERIZATION OF CONJUGATED DIENES WITH ORGANO LITHIUM CATALYSTS

Charles R. Johnson, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 59,221, July 29, 1970, now Patent No. 3,681,304, dated Aug. 1, 1972. This application May 17, 1972, Ser. No. 253,946
The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed
Int. Cl. C08d *1/32, 3/08*; C08f *19/08*
U.S. Cl. 260—83.7 7 Claims

Butadiene and/or isoprene, optionally with styrene, are mass polymerized continuously by introducing at least part of the monomer and a lithium-based initiator into the bottom region of an elongated, vertical, pressurized reaction vessel. The materials are agitated, and additional monomer, if any, is introduced into the reaction vessel as the materials flow from the bottom to the top of the reaction vesel, through a throttle valve, and then into a second vessel. At least a major portion of the heat of reaction is contained within the reaction vessel. A portion of unreacted monomer vapor is removed from the second vessel to control the pressure and temperature within it; in this manner the pressure, and hence the temperature in the reaction vessel are controlled to permit some boiling in the top of the reaction vesesl. The boiling produces agitation, and the removal of vapor raises the solids content of the materials. The throttle valve can be partially closed to increase the pressure in the reaction vessel. Monomer vapors removed are condensed and recycled, and the remaining material is discharged from the second vessel.

3,801,556

VINYL CHLORIDE BASED POLYMERS MANUFACTURED BY INITIATORS PREPARED IN-SITU

Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed June 19, 1972, Ser. No. 264,043
Int. Cl. C08f *3/30, 15/06, 15/30*
U.S. Cl. 260—87.1 7 Claims

Granular vinyl chloride based polymers are manufactured in the presence of a bis-peroxysulfone free-radical catalyst, which catalyst is prepared in-situ in the presence of the monomers. The in-situ reaction can be conducted in either an acid or alkaline pH using a flexible ratio of reactants without adversely affecting product quality.

3,801,557

IN-SITU INITIATION OF VINYL CHLORIDE POLYMERS WITH SULFONYL PEROXIDES

Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed June 19, 1972, Ser. No. 264,045
Int. Cl. C08f *3/30, 15/06, 15/30*
U.S. Cl. 260—87.1 8 Claims

High quality granular vinyl chloride based polymers are manufactured in the presence of an organic sulfonyl peroxide free-radical catalyst, which is prepared in-situ in the presence of the vinyl monomers. The in-situ reaction may be conducted over a wide pH range using a flexible ratio of reactants without adversely affecting product quality.

3,801,558

OLEFIN POLYMERIZATION

Kenneth L. Fletcher, Lancs, and Robert N. Haward, Cheshire, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 30, 1971, Ser. No. 188,703
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—88.2 R 10 Claims

Olefin polymer is produced by polymerizing alpha-olefins of 2 to 8 carbon atoms with a Ziegler type catalyst comprising (a) a transition metal component produced by reacting a transition metal compound in its highest

valence state with a reducing organomagnesium compound produced by reacting magnesium metal and a hydrocarbyl halide in the presence of a hydrocarbon solvent and a complexing agent for the organomagnesium compound and (b) an organoaluminum compound.

3,801,559

POLY-1-CHLORO CYCLOOCTADIENE

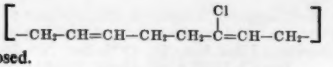
Eilert A. Ofstead, Cuyahoga Falls, and Nissim Calderon, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of application Ser. No. 68,036, Aug. 28, 1970, which is a continuation-in-part of application Ser. No. 762,659, Sept. 25, 1968, which is a continuation-in-part of application Ser. No. 477,035, Aug. 3, 1965, which in turn is a continuation-in-part of application Ser. No. 448,872, Apr. 16, 1965, all now abandoned. This application July 31, 1972, Ser. No. 276,624

Int. Cl. C08f *5/00*

U.S. Cl. 260—91.5 **7 Claims**

A method for the ring-opening polymerization of 1-chloro-1,5-cyclooctadiene is disclosed. The method comprises polymerizing 1-chloro-1,5-cyclooctadiene in the presence of a catalyst system comprising (A) at least one organometallic compound wherein the metal is selected from the group consisting of I*a*, II*a*, II*b* and II*a* of the Periodic Table of Elements, (B) at least one transition metal salt selected from the group consisting of tungsten and molybdenum halides and (C) at least one compound of the general formula R—Y—H wherein Y is oxygen; H is hydrogen and R is a radical selected from the group consisting of (1) hydrogen, (2) alkyl, (3) aryl, (4) arylalkyl, (5) alkaryl, (6) alkenyl, and (7) radicals of (2) through (6) wherein at least one hydrogen of the radical R may be substituted by at least one hydroxyl group; also a polymer consisting of repeating units having the formula



is disclosed.

3,801,560

CONTINUOUS EMULSION POLYMERIZATION OF COPOLYMERIZATION OF VINYL CHLORIDE WITHOUT HEAVY METAL SALTS

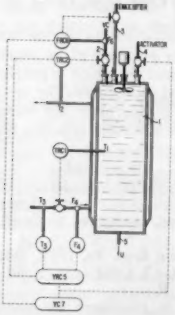
Harry Roll, Jorg Wergau, and Walter Dockhorn, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,621

Claims priority, application Germany, Feb. 23, 1972, P 22 08 442.0

Int. Cl. C08f *1/13, 1/62*

U.S. Cl. 260—92.8 W **2 Claims**



Improvements in the continuous catalytic emulsion polymerization or copolymerization of vinyl chloride in the presence of anionic emulsifiers and using redox systems as catalysts comprising carrying out the polymerization in the absence of heavy metal salts and in the presence of about 0.020 to 0.0025 percent by weight hydrogen peroxide and about 0.008 to 0.001 percent by weight of ascorbic acid based upon the weight of monomers or comonomers, a weight ratio of said hydrogen peroxide to ascorbic acid of about 4:1 to 2:1, at a pH value of about 7.0 to 5.0 and at a temperature of about 30–70° C.

3,801,561

DERIVATIVES OF SALMON THYROCALCITONIN

Stephan Guttmann, Allschwil, and Janos Pless and Heinz Bossert, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

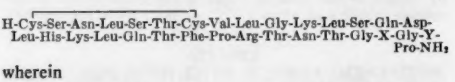
No Drawing. Filed Oct. 27, 1971, Ser. No. 193,166

Claims priority, application Switzerland, Oct. 29, 1970, 15,992/70; Dec. 7, 1970, 18,706/70; July 5, 1971, 9,826/71, 9,827/71

Int. Cl. C07c *103/52*; C07g *7/00*

U.S. Cl. 260—12.5 **3 Claims**

The invention concerns novel polypeptides of the formula:



H-Cys-Ser-Asn-Leu-Ser-Thr-Cys-Val-Leu-Gly-Lys-Leu-Ser-Gln-Asp-Leu-His-Lys-Leu-Gln-Thr-Phe-Pro-Arg-Thr-Asn-Thr-Gly-X-Gly-Y-Pro-NH$_2$

wherein

X is valyl and
Y is alanyl, or
X is alanyl and
Y is valyl,

and pharmaceutically acceptable acid addition salts and metal complexes thereof.

The compounds are useful in lowering the calcium level of plasma.

3,801,562

N-ACYLATED PEPTIDES OF AMINO AROMATIC ACIDS AND THEIR DERIVATIVES

Peter L. de Benneville, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,176

Int. Cl. C07c *103/20, 103/32, 103/52*

U.S. Cl. 260—112.5 **12 Claims**

Polypeptides which are useful for evaluating pancreatic enzyme sufficiency in animal organisms have the formula

$$RCO—A_n—NHR'CO—B_m—NHZ$$

wherein

R is a hydrogen atom; a phenyl group; a phenyl group substituted with one or more halogen atoms, (C_1–C_4) alkyl groups, hydroxy groups, (C_1–C_4)alkoxy groups, (C_1–C_4)alkoxy carbonyl groups, or similar substituents which will not interfere with the test efficacy of the polypeptide; a (C_1–C_{12})alkyl group, preferably a (C_1–C_6)akyl group; a (C_1–C_{12})alkyl group substituted by one or more halogen atoms, (C_1–C_4)alkoxy groups, hydroxy groups, acyloxy groups, preferably (C_1–C_4) alkanoyloxy or benzoyloxy, polyalkoxyalkyl groups, phenyl groups, or similar substituents which will not interfere with the test efficacy of the polypeptide; a (C_1–C_{12})alkoxy group, preferably a (C_1–C_6)alkoxy group; an aryloxy group having up to 10 carbon atoms; or a divalent alkylene group having up to 6 carbon atoms, in which case the formula would be written as

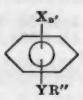
$$R(—CO—A_n—NHR'CO—B_m—NHZ)_2$$

or, when the blocking group is derived from oxalic acid, as

$$(CO—A_n—NHR'CO—B_m—NHZ)_2$$

NHR'CO is the amino acid linkage derived from L-phenylalanine, L-tyrosine, L-leucine, L-methionine, L-tryptophan, L-arginine, or L-lysine;

Z is a group of the formula



wherein

R'' is a hydroxy group, a (C_1–C_4)alkoxy group, a (C_1–C_4) alkoxyalkoxy group, a (C_1–C_8)aminoalkoxy group, an amino group, a (C_1–C_4)monoalkylamino group, a (C_1–C_4)dialkylamino group, a group of the formula $NHCH_2COR''$, or a salt, such as the sodium, potassium, or ammonium salt, of the group in which R'' is a hydroxy group;

Y is a group of the formula —CO— or —SO_2—;

X is a hydroxy group, a (C_1–C_4)alkyl group, a halogen atom, a (C_1–C_4)alkoxy group, or a similar substituent which will not interfere with the test efficacy of the polypeptide; and

n' is 0, 1, or 2;

A and B are the residues of low molecular weight amino acids, such as glycyl, alanyl, glycylglycyl, and the like, and

n and *m* are 0, 1, or 2.

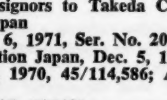
3,801,563

NOVEL DIPEPTIDE ESTERS CONTAINING L-ASPARTIC ACID

Nobuo Nakajima, Nishinomiya, Hisashi Aoki, Suita, Masahiko Fujino, Takarazuka, Osamu Nishimura, Toyonaka, Mitsuhiro Wakimasu, Suita, and Mitsuhiko Mano, Settsu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,419
Claims priority, application Japan, Dec. 5, 1970, 45/107,880; Dec. 18, 1970, 45/114,586; Aug. 26, 1971, 46/65,358
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **5 Claims**

A dipeptide ester is provided herein of the general formula:



wherein R^1 is a branched or cyclic alkyl group of 3 to 8 carbon atoms, R^2 is a lower alkyl group of 1 to 2 carbon atoms, *n* is an integer 0 or 1 and C* represents that the radicals attached to the carbon atom show an L-configuration when *n* is 1. The present invention is also directed to methods of producing the aforementioned esters. These compounds have excellent utility as sweeteners for food, being free from an objectionable after-taste and having a quality of sweetness comparable to sucrose.

3,801,564

PROCESS FOR THE PREPARATION OF DES-PHENYLALANINE^{B1}-INSULIN

Rolf Geiger, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,097
Claims priority, application Germany, Feb. 7, 1970, P 20 05 658.0
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.7 **4 Claims**

Process for the preparation of des-phenylalanine^{B1}-insulin by reacting insulin in a mixture of an N,N-dialkylcarboxylic acid amide, and of an aqueous buffer solution having a pH-value of 8.0 to 9.0, with tertiary butyloxycarbonyl-azide, reacting subsequently with a phenylisothiocyanate and treating the reaction product with a strong acid.

3,801,565

GLYCOSIDE METABOLITES OF *OOSPORA VIRESCENS* (LINK) *WALLR* FUNGUS

Nera Cagnoli Bellavita, Via XX Settembre 2, Perugia, Italy

Filed Jan. 11, 1971, Ser. No. 105,477
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **15 Claims**

Eight glycoside metabolite compounds are produced by the *Oospora virescens* (link) *wallr* fungus in glucose-organic decoction media which can be separated from the growth media and from each other. These compounds are effective bacterial and antimycotic agents.

3,801,566

REMOVAL OF LACTAMS FROM A MEDIUM WHICH CONTAINS CONCENTRATED SULPHURIC ACID OR SULPHUR TRIOXIDE

Jan Elmendorp, Brunssum, and Abraham H. de Rooij, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed June 15, 1971, Ser. No. 153,188
Claims priority, application Netherlands, June 17, 1970, 7008837
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **5 Claims**

A process for recovering ε-caprolactam from solutions of ε-caprolactam and sulphuric acid and SO_3 is disclosed wherein ammonium dihydrogen phosphate or alkali metal dihydrogen phosphate is added to the lactam, sulphuric acid solution and the solution is then subjected to extraction by a substantially water immiscible solvent for the lactam whereby the lactam is extracted from the sulphuric acid solution and the lactam free sulphuric acid solution can be used to process rock phosphate to gypsum and phosphoric acid with the phosphoric acid being converted to ammonium or alkali metal dihydrogen phosphate to be used in treating further solutions of lactam and sulphuric acid.

3,801,567

PROCESS FOR THE MANUFACTURE OF 6-AMINO-3-CARBONYLAMINO-PENAM COMPOUNDS

Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 30, 1970, Ser. No. 51,365
Claims priority, application Switzerland, July 8, 1969, 10,374/69
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 **9 Claims**

The invention concerns a process for the manufacture of 6-amino-3-carbonylamino-penam and 7-amino-4-carbonylamino-ceph(2)em compounds by splitting the 6-acylamino and 7-acylamino groups in 6-acylamino-3-carbonylamino-penam and 7-acylamino-4-carbonylamino-ceph-(2)em compounds by conversion into the imide halides, treatment with alcohols and cleavage of the imino ethers.

3,801,568

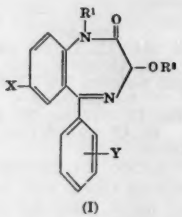
OPTICALLY ACTIVE 1,3 - DIHYDRO - 3-SUBSTITUTED 5-PHENYL - 2H-1,4 - BENZODIAZEPIN-2-ONES AND PROCESS FOR THEIR SEPARATION

Abraham Nudelman, Bala Cynwyd, and Ronald J. McCaully, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,262
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **5 Claims**

The disclosure is directed to diastereomeric mixtures of 1,3-dihydro - 3 - substituted-5-phenyl-2H-1,4-benzodiaze-

pin-2-ones and to the process for the separation of the diastereomers. The compounds of the invention have the structural formula



(I)

where X, Y, R^1 and R^2 are as defined below. The compounds have marked central nervous system depressant effects as well as muscle relaxant and antianxiety properties when evaluated in standard pharmacological procedures.

3,801,569

7-(1,1-DIFLUOROALKYL)-1,4-BENZODIAZEPINES

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 15, 1973, Ser. No. 323,549
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **11 Claims**

The present invention relates to benzodiazepines bearing a lower alkyl-CF_2-group in position-7 and processes for preparing the foregoing.

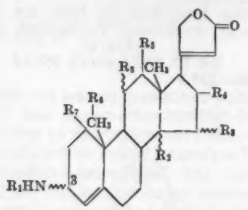
3,801,570

3-AMINO-4,5-DEHYDRO-CARDENOLIDES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,163
Claims priority, application Germany, Oct. 29, 1970, P 20 53 117.3
Int. Cl. C07c *173/02*
U.S. Cl. 260—239.57 **9 Claims**

3-amino - 4,5 - dehydro-cardenolides of the general formula



in which R_1 represents hydrogen or a lower aliphatic acyl radical, R_2 and R_3 each represent hydrogen or hydroxy, or R_2 and R_3 together represent a further C—C bond or an α- or β-oxido group, R_4, R_5, R_6 and R_7 each represent hydrogen or a hydroxy group which may be esterified—the OH group for R_6 may also be etherified—R_8 represents hydrogen or hydroxy, and the salts thereof with inorganic or organic acids, if R_1 represents hydrogen. The compounds have valuable pharmalogical properties, especially a positive or negative inotropic action and a substantially improved lipid solubility. Methods for making and using the compounds.

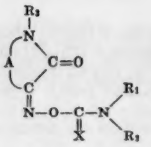
3,801,571

3-CARBAMOYLOXIMINO-AZACYCLOHEPTAN-2-ONES

Erika Reichel, Kussnacht am Rigi, and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 30, 1970, Ser. No. 51,354
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 R **3 Claims**

New 3-carbamoyloximino-azacycloheptan-2-ones of the formula



(I)

wherein

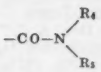
A is a tetramethylene radical optionally substituted by lower alkyl with 1 to 4 carbon atoms,

R_1 is hydrogen, an alkyl or alkenyl radical or a cycloalkyl radical optionally substituted by alkyl which radical has at most 20 carbon atoms,

R_2 is an alkyl or alkenyl radical or a cycloalkyl radical optionally substituted by alkyl, which radical has at most 20 carbon atoms, or an aryl or aralkyl radical, which is unsubstituted or substituted by halogen atoms, lower alkyl, alkoxy or halogenoalkyl groups with 1 to 4 carbon atoms,

the symbols R_1 and R_2 together with the adjacent nitrogen atom are a 3- to 10-membered heterocyclic radical,

R_3 is hydrogen or the group



in which R_4 and R_5 independently are hydrogen atoms, lower alkyl group with 1 to 4 carbon atoms, cycloalkyl, aryl or aralkyl radicals, and

X is an oxygen or sulfur atom,

are described. These compounds have excellent insecticidal, acaricidal, nematocidal and fungicidal activity. They are particularly valuable due to their pronounced systemic action. Pesticidal and fungicidal compositions containing these new substances as well as a method for the control of pest and fungi using these new substances are given.

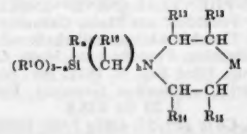
3,801,572

AMINO-FUNCTIONAL SILICONE COMPOUNDS

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,165
Int. Cl. C07d *93/10*
U.S. Cl. 260—243 R **3 Claims**

A novel class of silicone compounds of the formula,



wherein R, R^1, R^{16}, R^{12}, R^{13}, R^{14} and R^{15} are selected from hydrogen and hydrocarbon radicals, while M is selected from sulfone and ketone groups, *h* is a whole number that

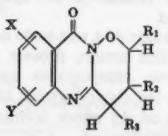
varies from 2 to 20 and *a* is a whole number that varies from 0 to 2. This novel class of compounds are useful as flocculents for colloidal organic matter as ingredients for detergent resistant polishes and as bonding agents for bonding various plastic resins and rubber to glass fibers and other types of glass material.

3,801,573
SUBSTITUTED AMINOSPIROTHIAZINES
Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Aug. 24, 1971, Ser. No. 174,512
Int. Cl. C07d *93/06*
U.S. Cl. 260—243 R 24 Claims

1,3-thiazines containing a substituted amino group at the 2-position and a spiro oxygenated heterocyclic ring are useful as analgesic, anti-inflammatory and antipyretic agents.

3,801,574
OXAZINOQUINAZOLINONES
David B. Reisner, Hightstown, Bernard J. Ludwig, North Brunswick, and Frank M. Berger, Princeton, N.J., assignors to Carter-Wallace, Inc., New York, N.Y.
No Drawing. Filed June 19, 1972, Ser. No. 264,312
Int. Cl. C07d *87/04*
U.S. Cl. 260—244 R 16 Claims

Chemical compounds of the formula:



Wherein X and Y each represent a member selected from the group consisting of hydrogen, halogen or lower alkyl and each R is selected from the group consisting of hydrogen and lower alkyl. The compounds have valuable anti-inflammatory activity in standard laboratory animals.

3,801,575
3-HYDROXYISOTHIAZOLES
Sheldon N. Lewis, Willow Grove, George A. Miller, Glenside, and Andrew B. Law, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Application Sept. 3, 1969, Ser. No. 855,046, which is a continuation-in-part of application Ser. No. 672,427, Oct. 3, 1967, which in turn is a continuation-in-part of application Ser. No. 621,766, Mar. 9, 1967, all now abandoned. Divided and this application Jan. 24, 1972, Ser. No. 219,937
Int. Cl. C07d *91/12*
U.S. Cl. 260—247.1 15 Claims

Disclosed herein are certain novel compounds which are most properly designated as substituted 3-hydroxyisothiazoles and salts of 3-hydroxyisothiazoles. These compounds and compositions containing them exhibit a broad spectrum of biocidal properties and are particularly effective for the control of microorganisms.

3,801,576
AROYL-ETHYL-HEXAMINIUM SALTS
Wilfried Paulus, Krefeld, Brigitte Hamburger, Cologne, and Otto Pauli, Krefeld, Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany
No Drawing. Filed July 7, 1971, Ser. No. 160,568
Claims priority, application Germany, July 11, 1970, P 20 34 540.8
Int. Cl. C07d *55/60*
U.S. Cl. 260—248.5 10 Claims

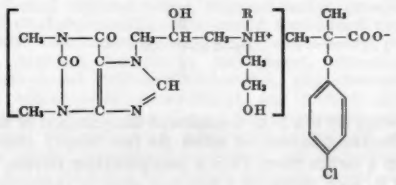
Microbiocidal agents containing aroyl-ethyl-ammonium salts as disclosed.

3,801,577
PHOSPHORIC AND THIOPHOSPHORIC ACID DERIVATIVES OF QUINOXALINE
Hans Helfenberger, Reinach, Basel-Land, and Karl Lutz, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
No Drawing. Filed Aug. 16, 1966, Ser. No. 572,660
Claims priority, application Switzerland, Sept. 3, 1965, 12,337/65
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 5 Claims

Phosphoric and thiophosphoric acid ester and amide derivatives of quinoxaline useful as insecticides, acaricides and nematocides.

3,801,578
7-[2-HYDROXY - 3 - (N-METHYL-2-HYDROXYETHYLAMINO)-PROPYL]-THEOPHYLLINE - 2-(4-CHLOROPHENOXY)-ISOBUTYRATE
Kalman Harsanyi, Dezso Korbonits, Rudolf Szebeni, Gyula Gal, and Laszlo Keller, Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek, Budapest, Hungary
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,424
Claims priority, application Hungary, Sept. 25, 1970, Ci-1,033
Int. Cl. C07d *57/52*
U.S. Cl. 260—253 1 Claim

A compound of the formula



(I)

wherein R is hydrogen or alkyl and a method of making same.

3,801,579
ACRIDINE AND TRIARYLMETHANE DYESTUFFS FROM DIARYLAMINES
Walter-Ernest Schmidt and Radu Vilceanu, Timisoara, Rumania, assignors to Centrul de Chimie Timisoara, Timisoara, Rumania
No Drawing. Continuation-in-part of abandoned application Ser. No. 51,691, July 1, 1970. This application Jan. 31, 1972, Ser. No. 222,281
Claims priority, application Rumania, Aug. 5, 1969, 60,726
Int. Cl. C07d *37/00*
U.S. Cl. 260—279 4 Claims

Process for the production of triarylmethane and acridine dyes. Diarylamines and tetrahalogenomethanes are reacted in a mixture of anhydrous zinc chloride with a molor ratio of at least 1:1. The mixture has the functions of catalyst and reaction mixture. The components of the catalyst and the reaction medium may be extracted by water from the crude reaction product.

3,801,580
PROCESS FOR THE ALKYLATION OF THE PYRIDINE RING
Francesco Minisci and Franco Bertini, Milan, Remo Galli, Torricella del Pizzo, and Adolfo Quilico, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed Oct. 22, 1971, Ser. No. 191,781
Claims priority, application Italy, Oct. 27, 1970, 7,401/70
Int. Cl. C07d *31/20, 33/30, 35/22*
U.S. Cl. 260—290 R 8 Claims

A process is disclosed for alkylating pyridine derivatives (incldng pyridine) and for obtaining alkyl- and cyclo-

alkyl-derivatives of pyridine in which the alkyl of cycloalkyl group is in a 2, 4 or 6 position with respect to the heterocyclic niitrogen atom, wherein the pyridine derivative is reacted in an aqueous solution with a carboxylic acid, R—COOH, wherein R is an alkyl or a cycloalkyl group having from 1 to 17 carbon atoms, in the presence of an alkaline or ammonium persulphate and of catalytic quantities of Ag^+ ions, at atmospheric pressure and at temperatures between 40° C. and 100° C.

3,801,581

α-PHENYL-FATTY ACIDS SUBSTITUTED BY AZACYCLOALKYL RESIDUES AND THEIR DERIVATIVES

Alberto Rossi, Oberwil, Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

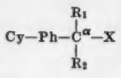
No Drawing. Filed May 27, 1970, Ser. No. 41,107

Claims priority, application Switzerland, June 5, 1969, 8,650/69; Dec. 11, 1969, 18,441/69; Apr. 24, 1970, 6,221/70

Int. Cl. C07d *29/24, 29/30*

U.S. Cl. 260—293.72 **4 Claims**

Compounds of the formula



(I)

in which Cy is a 5- or 6-membered azacycloalkyl or azacycloalkenyl residue, of which the free valency extends from a carbon atom, Ph is a para-phenylene residue, R_1 and R_2 each represents a hydrogen atom or represents a monovalent, or together represent a divalent, hydrocarbon residue of aliphatic character, and X is a free or esterified carboxyl group or a converted carboxyl group, in which two hetero atoms, of which at least one is a nitrogen atom, are bound to the carbon atom of the converted carboxyl group, and their salts are useful as anti-inflammatory and antiphlogistic agents.

3,801,582

HALOPYRIDINE SULFONIC ACIDS

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 18, 1972, Ser. No. 254,628

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 R **8 Claims**

Compounds corresponding to the formula

wherein X represents chloro or bromo; Z represents hydrogen, chloro or bromo and R represents hydrogen, alkali metal, lower alkyl of 1 to 4 carbon atoms, phenyl or chlorophenyl are prepared. The compounds have been found to be effective toxicant agents in the control of various bacterial, fungal and plant pests.

3,801,583

DERIVATIVES OF 2-MERCAPTO-PYRIDO[1,2-b]-1,2,4-THIADIAZOLIUM SALTS

Roger Lawrence Newton Harris, Aranda, Australian Capital Territory, Australia, and Rüdiger Spaun, Bottmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

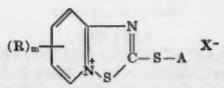
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,529

Claims priority, application Switzerland, Dec. 1, 1971, 17,461/71

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **6 Claims**

New derivatives of 2 - mercapto-pyrido[1,2-b]-1,2,4-thiadiazolium salts of the formula



wherein

R represents hydrogen, halogen, nitro, alkyl or alkoxy;

m denotes 1 or 2;

A stands for an optionally substituted straight-chain or branched alkyl radical or an optionally substituted phenylalkyl; and

X represents the anion of a non-toxic acid having a broad range anthelmintic action, process for their production, anthelmintic compositions containing a thiadiazolium salt of the above formula and the use of thiadiazolium salts of the above formula for the control of parasitic helminthes.

3,801,584

PROCESS FOR PRODUCING PYRIDINE CARBOXYLIC ACIDS

Masayoshi Kubo and Takeshi Horikawa, Ohimachi, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,676

Claims priority, application Japan, Dec. 30, 1970, 46/122,247

Int. Cl. C07d *31/34*

U.S. Cl. 260—295 **4 Claims**

A process for producing pyridine carboxylic acids by oxidizing alkyl pyridines in the liquid phase with a molecular oxygen-containing gas in the presence of a catalyst consisting of zirconium compounds, salts of other transition metals and bromine compounds.

3,801,585

PREPARATION OF 3,4 - DICYANO - 1,2,5-THIADIAZOLE FROM HCN, TRIMETHYLAMINE, CHLORINE, AND SULFUR OR SULFUR DICHLORIDE

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,347

Int. Cl. C07d *91/68*

U.S. Cl. 260—302 D **8 Claims**

3,4-dicyano-1,2,5-thiadiazole and 3,4 - dichloro - 1,2,5-thiadiazole are prepared from hydrogen cyanide, a tertiary amine, chlorine, and sulfur or sulfur dichloride.

3,801,586

PESTICIDAL 3-PHOSPHORYLATED 1,2,4-THIADIAZOLE DERIVATIVES

Michael D. Barker, Maidstone, Jack Wood, Sittingbourne, and Edward N. Binnie, Faversham, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed July 6, 1972, Ser. No. 269,342

Claims priority, application Great Britain, July 27, 1971, 35,214/71

Int. Cl. C07d *71/60*

U.S. Cl. 260—302 E 3 Claims

Novel pesticidal 3-phosphorylated 1,2,4-thiadiazole derivatives.

3,801,587

PROCESS FOR THE PREPARATION OF 2-(4-AMINOPHENYL)-6-METHYL-BENZOTHIAZOLE

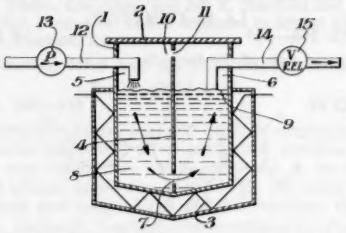
Walther Loewe, Bergen-Enkheim, and Karl-Heinz Cossmann and Ernst Meyer, Frankfurt am Main, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt (Main) Fechenheim, Germany

Filed Feb. 7, 1972, Ser. No. 224,105

Claims priority, application Germany, Feb. 10, 1971, P 21 06 200.0

Int. Cl. C07d *91/44*

U.S. Cl. 260—304 7 Claims



Reaction of sulfur and p-toluidine at elevated temperature and pressure to produce the title product.

3,801,588

CERTAIN PERFLUOROALKYLSULFONAMIDOTHIAZOLES

Joseph Kenneth Harrington, Edina, Donald C. Kvam, North Oaks, Arthur Mendel, Vadnais Heights, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 837,932, June 30, 1969, now Patent No. 3,637,729, which is a continuation-in-part of abandoned application Ser. No. 588,338, Oct. 21, 1966. This application May 11, 1971, Ser. No. 142,381

Int. Cl. C07d *91/26*

U.S. Cl. 260—306.8 R 4 Claims

N-substituted perfluoroalkanesulfonamides in which the sulfonamide nitrogen substituent is a heteroatom-containing group selected from pyridinyl, quinolinyl, pyrazolyl, thiazolyl, quinoxalinylphenyl, imidazo[1,2a]pyridinylphenyl, imidazo[1,2a]pyrimidylphenyl and benzoxazolyl which can be unsubstituted or which can carry certain substituents.

Also included are salts of these compounds, compositions containing the compounds of the present invention and processes for their preparation and use. The compounds are active as herbicides and plant growth modifiers.

3,801,589

1,3,4-THIADIAZOL-5-ONE-YL-UREAS

Klaus Sasse and Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 204,307, Dec. 2, 1971, which is a continuation-in-part of applications Ser. No. 817,417, Apr. 17, 1969, and Ser. No. 16,937, Mar. 5, 1970, all now abandoned. This application Feb. 8, 1972, Ser. No. 224,626

Claims priority, application Germany, Apr. 19, 1968, P 17 70 236.2; Mar. 22, 1969, P 19 14 629.3

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D 5 Claims

1,3,4 - thiadiazol-5-one-2-yl-ureas, i.e. 1-[4'-(optionally alkyl, alkoxy-alkyl, cycloalkyl, alkyl-cycloalkyl, cycloalkenyl, tetrahydronaphthyl, fluorenyl, phenyl-alkyl, naphthyl-alkyl, diphenyl-methyl, triphenyl-methyl, chlorobenzyl, alkyl-phenyl-alkyl, alkoxy-benzyl, nitro-benzyl, cyanobenzyl, trifluoromethyl-benzyl, dialkyl-amino-benzyl, phenyl, naphthyl, halo-phenyl, alkyl-phenyl, nitro-phenyl, cyano-phenyl, trifluoromethyl-phenyl, alkyl-chlorophenyl, trifluoromethyl-chloro-phenyl, and furfuryl substituted)-1',3',4'-thiadiazol-5'-one-2'-yl]-1-[optionally alkyl, alkenyl and alkoxy-alkyl substituted]-3-[optionally alkyl and alkenyl substituted]-3-[aliphatic and alkoxy]-ureas as well as the thione and thiourea analogues thereof which possess herbicidal properties, and which may be produced by conventional methods.

3,801,590

N-BENZYLTRIAZOLE COMPOUNDS AND PLANT GROWTH REGULANT COMPOSITIONS

Wilfried Draber, Wuppertal-Elberfeld, Erik Regel, Wuppertal-Cronenberg, Karl-Heinz Buchel, Wuppertal-Elberfeld, Ludwig Eue, Cologne, and Robert R. Schmidt, Leverkusen-Rheindorf, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

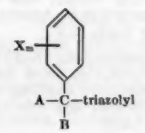
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,574

Claims priority, application Germany, Dec. 24, 1969, P 19 64 995.7

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H 9 Claims

N-benzyltriazoles of the formula



in which

triazolyl is 1,2,4 or 1,2,3 triazolyl which may be substituted;

X is halogen, trifluoromethyl, lower alkyl, lower alkoxy, lower alkylthio, aryl, nitro, cyano or (alkylated) amino;

m is 0, 1 or 2;

A is optionally substituted phenyl, pyridyl, alkyl or cycloalkyl; and

B is a 5-membered heterocyclic ring, e.g., N-heterocycle;

and their salts are outstandingly effective in regulating plant growth, e.g., inhibiting, stimulating or altering plant growth.

3,801,591

PRODUCTION OF PHTHALOCYANINE PIGMENT

Julius Jackson, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 12, 1972, Ser. No. 261,810

Int. Cl. C09b *47/04*

U.S. Cl. 260—314.5 **3 Claims**

A metal phthalocyanine pigment composed almost exclusively of the α I polymorph is prepared by a process in which crude metal phthalocyanine is subjected to controlled precipitation in two sages followed by conditioning of the resultant slurry under intense agitation to generate an air/liquid interface and thereby facilitate flocculation, hence filtration.

3,801,592

4-HYDROXY-1-PHENYL-2-PYRROLIDINO-PENTANE AND SALTS THEREOF

Ernst Seeger, Joachim Kahling, and Wolfhard Engel, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

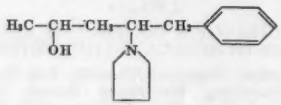
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,660

Claims priority, application Germany, Mar. 30, 1971, P 21 15 281.8

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.5 R **2 Claims**

Mixtures of diastereoisomers of 4-hydroxy-1-phenyl-2-pyrrolidino-pentane of the formula



individual diastereomeric isomer components of said mixture, and non-toxic acid addition salts thereof; the compounds are useful as central nervous system stimulants.

3,801,593

1-ACETYL-2-ACETYLIMINO-5-CHLORO-3-PHENYL-3-INDOLINOL, ACETATE

Stanley C. Bell, Penn Valley, and Peter H. L. Wei, Springfield, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Application Jan. 13, 1970, Ser. No. 7,304, now Patent No. 3,686,210, dated Aug. 22, 1972, which is a division of abandoned application Ser. No. 694,089, Dec. 28, 1967. Divided and this application Feb. 17, 1972, Ser. No. 227,275

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 R **1 Claim**

The invention is directed to 2-acylamido-3-aryl-3H-indol-3-ol esters and their hydrolysis derivatives. The compounds have central nervous system activity as depressants or may be used as intermediates in the preparation of compounds that have such activity.

3,801,594

SUBSTITUTED HETEROETHYLENEINDOLES AND ACID ADDITION SALTS THEREOF

John Frank Poletto, Nanuet, N.Y., and George Rodger Allen, Old Tappan, Ruddy Littell, River Vale, and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation of application Ser. No. 68,005, Aug. 28, 1970, now Patent No. 3,686,213, which is a continuation-in-part of application Ser. No. 1,045, Jan. 6, 1970, which in turn is a continuation-in-part of application Ser. No. 603,772, Dec. 22, 1966, both now abandoned. This application Jan. 28, 1972, Ser. No. 221,759

Int. Cl. C07d *41/00*

U.S. Cl. 260—326.15 **7 Claims**

This invention describes new substituted indole compounds. Intermediate 3-halodicarbonyl indoles are also described. The preparation of the final products from the 3-halodicarbonyl indoles wherein the 3-position contains a disubstituted β-aminoethyl group is described. The compounds have utility as central nervous system depressants, analgesics, anti-inflammatory agents, and diuretic agents.

3,801,595

DISPERSE DYES OF THE ANTHRAQUINONE SERIES

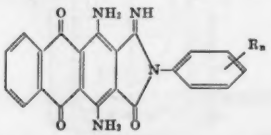
Ernst Hartwig, Heidelberg, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,867

Int. Cl. C07d *27/50*

U.S. Cl. 260—325 **6 Claims**

Disperse dyes of the formula:



in which R is hydrogen, halogen, alkyl, alkoxy, α-hydroxyethyl, β-hydroxyethyl, β-hydroxyethoxy, β,β-dicarbalkoxyethyl or carbalkoxy and *n* is one of the integers, 1, 2 and 3.

The dyes dye linear polyester fibrous material greenish blue shades. The dyeings have excellent fastness properties.

3,801,596

BASIC DYES OF THE NAPHTHOLACTAM SERIES

Hans Baumann, Ludwigshafen, Andreas Einwiller, Lampertheim, and Guenter Hansen, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

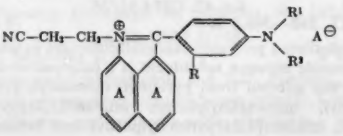
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,765

Claims priority, application Germany, Sept. 4, 1969, P 19 44 797.3

Int. Cl. C07d *27/46*

U.S. Cl. 260—326.62 **4 Claims**

Basic dyes having the Formula I:



(I)

where R is hydrogen, chlorine, methyl, methoxy, ethoxy, acetylamino or propionylamino, R^1 is unsubstituted or substituted alkyl, aralkyl or aryl, R^2 is hydrogen or unsubstituted or substituted alkyl or aralkyl R^1 and R^2 together with the nitrogen denote the radical of a heterocyclic ring and $A^{\ominus}$ is an anion, the naphthalene rings A if desired bearing chlorine, bromine or unsubstituted or substituted sulfonamide groups as substituents.

3,801,597

2,3-DIHYDRO-4H-THIENO[3,2-c][1]BENZOPYRAN-4-ONES

Yasuo Makisumi, 5–17, 2-chome, Midoridai, Kawanishi, Hyogo, Japan

No Drawing. Filed May 9, 1972, Ser. No. 251,720

Claims priority, application Japan, May 31, 1971, 46/37,616

Int. Cl. A61k *27/00;* **C07d** *63/08*

U.S. Cl. 260—332.2 H **11 Claims**

2,3-dihydro - 4H - thieno[3,2-c][1]benzopyran-4-ones synthesized from 4-allylthiocoumarins, 3-allyl-4-mercapto (or acylmercapto)-coumarins, 3-allyl-4-halogenocoumarins or 3-(2-halogenoethyl)-4-halogenocoumarins showing strong antipyretic and analgesic activities with low toxicity.

3,801,598

SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jorg R. Pfister, Los Altos, and Ian T. Harrison and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,261

Int. Cl. C07d *7/44*

U.S. Cl. 260—335 **25 Claims**

Compositions containing and methods employing, as the essential ingredient, novel substituted xanthone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions and intermediates therein are also disclosed. 7-methylsulfinylxanthone-2-carboxylic acid is illustrated as representative of the class.

3,801,599

PROCESS FOR THE PREPARATION OF 2,2,4,4-TETRAFLUORO-1,3-BENZODIOXANES

Hans-Ulrich Alles, Leichlingen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

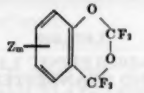
No Drawing. Filed Aug. 10, 1971, Ser. No. 170,653

Claims priority, application Germany, Aug. 13, 1970, P 20 40 186.9

Int. Cl. C07d *15/08*

U.S. Cl. 260—340.3 **8 Claims**

2,2,4,4-tetrafluoro-1,3-benzodioaxanes having the formula



wherein

m is 0–4, and

Z is a substituent group which may be the same or different when *m* is 2–4,

are prepared by reacting 2-trichloromethoxybenzoylchloride with an excess of anhydrous hydrofluoric acid at a temperature of from −10 to 40° C.

3,801,600

OLFACTORY DIOXOLANE DERIVATIVES AND COMPOSITIONS CONTAINING SAME

Peter Naegeli, Unter-Ehrendingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,987

Claims priority, application Switzerland, Jan. 9, 1970, 242/70

Int. Cl. C07d *13/00*

U.S. Cl. 260—340.5 **9 Claims**

Dioxolanes wherein the dioxolane ring is fused to a saturated or unsaturated 12-membered hydrocarbon ring, and constituting a novel series of olfactory agents, useful in perfumes, cosmetics, detergents, soaps, etc.

3,801,601

2-ACYLAMIDO - 2 - (3,4-METHYLENEDIOXYBENZYL) - 3 - HYDROXY-PROPIONITRILE COMPOUNDS

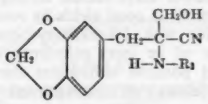
Donald F. Reinhold and Meyer Sletzinger, North Plainfield, and Raymond A. Firestone, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Division of application Ser. No. 829,129, May 29, 1968, which is a division of application Ser. No. 675,729, Sept. 7, 1967, now abandoned, which in turn is a division of application Ser. No. 350,111, Mar. 6, 1964, now Patent No. 3,395,176. This application Oct. 27, 1971, Ser. No. 193,179

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **1 Claim**

The invention comprises compounds of the formula



in which R_3 is selected from the group consisting of acetyl and formyl.

3,801,602

2-IMINO-6-AMINO-SUBSTITUTED COUMARINS

Horst Scheuermann, Ludwigshafen, Wolfgang Mach, Hockenheim, and Volker Radtke, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 6, 1972, Ser. No. 260,323

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **3 Claims**

Fluorescent dyes containing a 2-imino-6-amino-substituted coumarin moiety. The dyes are eminently suitable for use in textile printing colors and give brilliant yellow shades having good fastness properties.

3,801,603

PROCESS FOR THE PREPARATION OF 6-HYDROXY CHROMANS

Peter Hartmann, Cologne, Stammheim, and Ernst Roos, Cologne, Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,908

Claims priority, application Germany, Jan. 14, 1971, P 21 01 480.2

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.5 **8 Claims**

6-hydroxy chromans are prepared by reacting a hydroquinone with a 1,3-diene in a two-phase aqueous mineral

acid/hydrocarbon solvent system at an elevated temperature, continuously removing a portion of the organic solvent phase during the reaction, evaporating solvent contained therein and returning same to the reaction mixture, and isolating the 6-hydroxy chroman formed.

3,801,604

PROCESS FOR PREPARING 3-ALKOXY-5-METHYL PHTHALIC ANHYDRIDES

Gerard Lang, 26 ter Avenue Jean-Jaures, 93 Epinay-sur-Seine, France

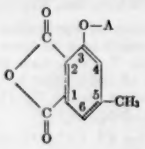
No Drawing. Filed Sept. 7, 1971, Ser. No. 178,421

Claims priority, application Luxembourg, Sept. 7, 1970, 61,654

Int. Cl. C07c *63/14*

U.S. Cl. 260—346.6 **6 Claims**

In the disclosed process 3-alkoxy-5-methyl phthalic anhydrides of the formula:



where A is a lower alkyl radical having 1 to 4 carbon atoms, are prepared in good yields by reacting a halogenmaleic anhydride with 1,1-dialkoxy-3-methyl butadiene in the presence of an inert anhydrous solvent. The 3-alkoxy-4-methyl phthalic anhydrides thus prepared are useful for the synthesis of anthraquinonic compounds.

3,801,605

5-AROYL-FURANS

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,860

Int. Cl. C07c *5/16*

U.S. Cl. 260—347.3 **10 Claims**

Compounds of the class of 5-aroyl-furan-2-acetic acids and esters useful as anti-inflammatory agents and the corresponding nitrile and amide precursors thereof.

3,801,606

ANTHRAQUINONE DYES

Hans-Samuel Bien, Burscheid, Walter Hohmann and Heinrich Vollmann, Leverkusen, and Heinrich Leister, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 571,431, Aug. 10, 1966. This application May 25, 1970, Ser. No. 41,689

Int. Cl. C09b *1/50*

U.S. Cl. 260—380 **4 Claims**

Novel dyes which are 1,4-dihydroxy-8-amino-anthraquinones having in the 5-position an unsubstituted or substituted amino group and in the 7-position an alkoxy, phenoxy, mercapto or thiophenyl group, are produced by reacting a 1,4-dihydroxy-8-amino-anthraquinone which contains in the 5-position an unsubstituted or substituted amino group and in the 7-position a halogen, phenoxy or sulfonic acid group with a mercaptan, thiophenol, alcohol or phenol. Affinity of the dyes can be improved by halogenation.

3,801,607

DERIVATIVES OF DINORCHOLESTANE AND PROCESS

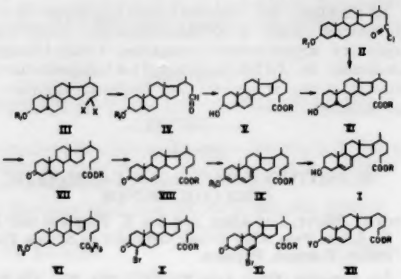
Bernard Goffinet, Paris, France, assignor to Roussel-UCLAF, Paris, France

Filed Mar. 10, 1972, Ser. No. 233,767

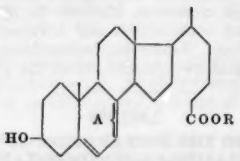
Claims priority, application France, Mar. 11, 1971, 8,475

Int. Cl. C07c *169/52*

U.S. Cl. 260—397.1 **21 Claims**



A process for the preparation of lower alkyl esters of 26,27-dinorcholesten-25-oic acids of the Formula I



(I)

wherein R is lower alkyl and A is two hydrogens or a double bond and intermediates so produced. The compounds of the Formula I are intermediates in the synthesis of 25-hydroxy cholesterol and 25-hydroxy-7(8)-dehydro-cholesterol. These latter compounds are themselves intermediates in the preparation of 25-hydroxy-cholecalciferol which possesses an important anti-rachitic property, superior to that of cholecalciferol or vitamin D_3.

3,801,608

NOVEL 2,4-DIOLEFINIC 2,2-DIESTERS AND CYANOESTERS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed July 17, 1972, Ser. No. 272,517

Int. Cl. C08h *3/00*

U.S. Cl. 260—399 **19 Claims**

Aliphatic substituted di-olefinic geminal diesters and cyanoesters, synthesis thereof and the control of insects.

3,801,609

N-SUBSTITUTED FATTY ACID AMIDE LUBRICANTS

Frank C. Magne, Robert R. Mod, and Gene Sumrell, New Orleans, La., and Winfred E. Parker, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 31, 1971, Ser. No. 176,734, now Patent No. 3,746,644. Divided and this application Apr. 6, 1973, Ser. No. 348,804

Int. Cl. C08h *3/00, 9/02*

U.S. Cl. 260—402.5 **1 Claim**

This invention relates to N-acylmorpholines and N-mono and N,N-disubstituted fatty acid amides and to similar derivatives of epithioamides which are useful as base and extreme pressure lubricants and additives.

3,801,610

PREPARATION OF CARBOXYLIC ACID AMIDES

Achim Werdehausen, Monheim, and Herbert Weiss, Cologne-Deutz, Germany, assignors to Henkel & Cie., G.m.b.H., Dusseldorf, Germany

No Drawing. Filed May 24, 1971, Ser. No. 146,564

Claims priority, application Germany, Mar. 3, 1971, P 21 10 060.7

Int. Cl. C07c *103/30*

U.S. Cl. 260—404 **8 Claims**

A method for the production of N-substituted amides of fatty acids of 8 to 24 carbon atoms by reacting the free carboxylic acids or their esters with amines in the presence of catalysts consisting of compounds of metals of the Group IV*b* and V*b* of the Periodic Table which are soluble in the reaction mixture.

3,801,611

OXY-SUBSTITUTED 3,4-ALLENIC FATTY ACID ESTERS

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 187,897, Oct. 8, 1971, now Patent No. 3,755,411. This application June 26, 1972, Ser. No. 266,091

Int. Cl. C07c *69/62, 69/66*

U.S. Cl. 260—410.9 R **8 Claims**

Aliphatic substituted allenic and diolefinic esters, intermediates therefor, derivatives thereof and the control of insects.

3,801,612

ALIPHATIC SUBSTITUTED-2-EN-4-YNE ACIDS AND ESTERS

William E. Willy and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,169

Int. Cl. A01n *9/24;* **C07c** *57/18, 59/18*

U.S. Cl. 260—410.9 R **10 Claims**

Aliphatic substituted acids and esters with olefinic unsaturation at C–2 and acetylenic unsaturation at C–4, synthesis thereof, intermediates therefor, derivatives thereof, and the control of insects.

3,801,613

CHOLINE SALICYLATE COMPOSITIONS

Walter Thomas Swimm, Darien, Conn., assignor to The Purdue Frederick Company, Yonkers, N.Y.

No Drawing. Filed Nov. 6, 1972, Ser. No. 303,920

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 N **6 Claims**

Choline salicylate-silanized silicon dioxide a stable solid, non-hygroscopic composition possessing the full spectrum of analgesic, anti-pyretic and anti-inflammatory properties of choline silicylate is prepared by reaching a choline ion with a salicylate ion and then combining with silanized silicon dioxide in the presence of an inert anhydrous solvent to form the new composition. Solid pharamaceutical dosage forms are prepared with the new composition which are useful in the treatment of musculo-skeletal disease, the relief of pain and the lowering of fever in humans and animals. A method for increasing the concentration of blood salicylate ion through the oral administration of the aforesaid choline salicylate-silanized silicon dioxide and pharmaceutical composition containing the same, is presented.

3,801,614

PROCESS FOR THE PRODUCTION OF β-CHLOROETHYL-TRICHLOROSILANE

Dieter Lohmann, Pratteln, and Gerd Greber, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 1, 1972, Ser. No. 285,769

Claims priority, application Switzerland, Sept. 3, 1971, 12,946/71

Int. Cl. C07f *7/08, 7/12*

U.S. Cl. 260—448.2 E **5 Claims**

A new process for the preparation of β-chloroethyltrichlorosilane by adding hydrogen chloride to vinyl-trichlorosilane in the presence of a Lewis acid is disclosed whereby said β-chloroethyl-trichlorosilane is obtained in high yields.

3,801,615

COLOR REDUCTION PROCESS

Vincent T. Chuang, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,680

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **3 Claims**

The process of reducing undesirable discoloration of oxidatively polymerizable olefinically unsaturated monomers caused by the presence of benzoquinone therein, which comprises adding an amount of an olefinically unsaturated conjugated diene to such discolored monomer in an amount sufficient to form enough Diels-Alder adducts with the benzoquinone present to remove the undesired discoloration caused by the presence of benzoquinone.

3,801,616

PROCESS FOR PRODUCING SILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS

Carl J. Litteral, Marietta, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,732

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **10 Claims**

This application relates to a process for producing siloxane-polyoxyalkylene block copolymers by reacting an alkoxysiloxane and a hydroxyl endblocked polyoxy-alkylene copolymer in the presence of an acid salt catalyst having a pH within a critical range. The block copolymers produced by the process are useful as foam stabilizers in producing polyurethane foams.

3,801,617

THIOPHENYL ETHER DISILOXANES AND TRISILOXANES USEFUL AS LUBRICANT FLUIDS

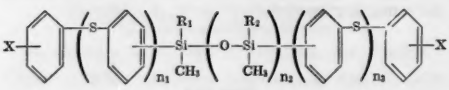
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Norman Bilow and Richard I. Akawie, Los Angeles, Calif.

No Drawing. Filed July 24, 1973, Ser. No. 382,262

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 N 5 Claims

Thiophenyl ether siloxanes having the formula



where X is a hydrogen or halogen atom or an alkyl, aryl or aralkyl radical, n_1 and n_3 are integers from 1 to 3, n_2 is an integer from 1 to 2 and R_1 and R_2 are methyl or phenyl radicals. Compounds embodying the invention exhibit favorable properties for use as lubricants and functional fluids under severe conditions of temperature, radiation and vacuum.

3,801,618

PROCESS FOR ALKYL ORTHOSILICATE

James H. Walker, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 6, 1973, Ser. No. 366,383

Int. Cl. C07f 7/04

U.S. Cl. 260—448.8 A 1 Claim

An improved process for the preparation of alkyl orthosilicate from alkanol and silicon tetrachloride which includes the steps of charging silicon tetrachloride to the reactor after the introduction of alkanol has commenced, maintaining a temperature which achieves a homogeneous system throughout the reaction while removing unreacted alkanol and HCl.

3,801,619

NITRILE PROCESS

Walter A. Butte, Jr., West Chester, and Philmore M. Scudder, Havertown, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed July 23, 1971, Ser. No. 165,731

Int. Cl. C07c 121/02

U.S. Cl. 260—465 C 10 Claims

A process for making nitriles from alkyl substituted aromatic hydrocarbons by contacting vapors of said alkyl aromatic hydrocarbon and vaporized ammonium polysulfide at a temperature of about 300° to about 500° C., at essentially atmospheric pressure, and in the presence of a catalyst comprising a higher oxide of elements of Groups V–B, VI–B, the lanthanide group, and the actinide group.

3,801,620

SEPARATION OF LIQUID ISOPHTHALONITRILE

Peter Hosler, Wallingford, and Robert A. Baillie, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Aug. 23, 1971, Ser. No. 173,810

Int. Cl. C07c 121/54

U.S. Cl. 260—465 C 2 Claims

In the vapor phase ammoxidation of m-xylene to isophthalonitrile, the improvement which comprises cooling the gaseous products from the ammoxidation reactor to temperature and pressure conditions which will maintain said isophthalonitrile in the liquid phase, separating volatiles from said liquid isophthalonitrile, and recovering highly purified liquid isophthalonitrile as bottoms.

3,801,621

PROCESS FOR PREPARING UNSATURATED NITRILES BY CATALYTIC AMMOXIDATION OF SATURATED ALDEHYDES IN THE GAS PHASE

Guido Petrini and Luciano Moreschini, Milan, Franco Marciandi, Rho, and Franco Faletti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,619

Claims priority, application Italy, Apr. 29, 1971, 23,851/71; July 21, 1971, 7,515/71

Int. Cl. C07c 121/02, 121/30, 121/32

U.S. Cl. 260—465.9 10 Claims

α-β-Unsaturated nitriles are prepared by the gas phase reaction of one or more saturated C_3–C_8 aldehydes with molecular oxygen and ammonia in the presence of a catalyst containing antimony and uranium or iron at a temperature between about 300° and 600° C.

3,801,622

PROCESS FOR PURIFICATION OF α-UNSATURATED NITRILES

Ryuzo Kimoto and Kazuo Imaoka, Osaka, Masaaki Isurushima, Kyoto, and Kojiro Umemoto, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,917

Claims priority, application Japan, Oct. 13, 1970, 45/90,261

Int. Cl. C07c 121/30, 121/32

U.S. Cl. 260—465.9 4 Claims

Process for purifying crude α-unsaturated aliphatic nitriles having 3–5 carbon atoms, which crude nitriles are recovered as an unreacted starting material from the reaction mixture obtained by gas-phase chlorination of an α-unsaturated nitrile having 3–5 carbon atoms, by contacting the crude nitrile with iron, aluminum or their oxides.

3,801,623

CYCLOPENTANONE DERIVATIVES

Jacques Martel, Bondy, Edmond Toromanoff, Paris, and Jean Buendia, Fontenay-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

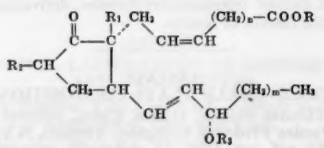
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,276

Claims priority, application France, Apr. 30, 1970, 7015910

Int. Cl. C07c 69/36, 69/74

U.S. Cl. 260—468 D 6 Claims

Novel prostanoic acid derivatives of the formula



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 7 carbon atoms, R_1 is selected from the group consisting of hydrogen and carbalkoxy of 1 to

7 alkyl carbon atoms, R_2 is selected from the group consisting of hydrogen, carboxy and carbalkoxy of 1 to 7 alkyl carbon atoms, R_3 is selected from the group consisting of hydrogen and α-tetrahydropyranyl, *m* is 3, 4 or 5 and *n* is 2, 3 or 4 with the proviso that when R_1 is carbalkoxy, R is alkyl of 1 to 7 carbon atoms, R_2 is hydrogen and R_3 is α-tetrahydro-pyranyl; when R_2 is carbalkoxy, R is alkyl of 1 to 7 carbon atoms, R_1 is hydrogen and R_3 is α-tetrahydropyranyl and when R_2 is carboxy, R and R_1 are hydrogen and R_3 is α-tetrahydropyranyl, which possess the physiological activity of prostaglandins, and salts thereof when R, R_1, R_2 and R_3 are hydrogen, with non-toxic pharmaceutically acceptable bases and their preparation.

3,801,624
DI-SUBSTITUTED β-PHENETHYLCARBAMIC ACID ESTERS

John Hans Biel, Lake Bluff, Ill., and Irwin L. Klundt, Brookfield, Wis., assignors to Aldrich Chemical Company, Milwaukee, Wis.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,586
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **13 Claims**

Di-substituted β-phenethylcarbamic acid esters. The compounds are useful as antidepressants and anti-Parkinsonism agents.

3,801,625
PROCESS FOR PRODUCTION OF UREA-CARBAMATE HERBICIDES AND INTERMEDIATES THEREFOR

Sanford Tyler Young, Lockport, and Kenneth R. Wilson, Tonawanda, N.Y., assignors to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 782,707, Dec. 10, 1968, which is a continuation-in-part of application Ser. No. 433,157, Feb. 16, 1965, now Patent No. 3,434,822, dated Mar. 25, 1969. This application Nov. 21, 1969, Ser. No. 878,957
Int. Cl. C07c *127/18*
U.S. Cl. 260—479 C **6 Claims**

An improved process is described for the preparation of m-(di-lower-alkylureido)phenyl N-substituted-lower-alkylcarbamate herbicides from nitrophenol, by the successive steps of carbamoylation of m-nitrophenol to form m-nitrophenyl N-substituted-carbamates, reducing said m-nitrophenyl carbamates to form m-aminophenyl N-substituted-carbamates, reacting these carbamates with phosgene to form m-isocyanatophenyl N-substituted-carbamates, and reacting said m-isocyanatophenyl carbamates with (di-lower-alkyl)amines to form the desired m-(di-lower-alkylureido)phenyl N-substituted-lower-alkylcarbamates. Substantially improved overall yields are obtained by this method of synthesis of the subject herbicides. The details of the synthetic method, and properties of some novel intermediates produced therein, are described.

3,801,626
PROCESS FOR THE PRODUCTION OF DICHLOROACETOXYPROPANE

Johann Grolig and Gerhard Scharfe, Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 13, 1972, Ser. No. 243,870
Claims priority, application Germany, Apr. 30, 1971, P 21 21 251.1
Int. Cl. C07c *67/00*
U.S. Cl. 260—491 **24 Claims**

Dichloroacetoxypropane is produced by reacting allyl acetate with chlorine in the liquid phase in the contacting presence of a catalyst containing at least one halide of a metal of Groups I–B, VII–B and VIII of the Periodic Table.

3,801,627
α-ACYLOXYACETIC ACID PRODUCTION

Victor P. Kurkov, San Rafael, Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 282,516, Aug. 21, 1972, now Patent No. 3,751,453. This application May 24, 1973, Ser. No. 363,777
Int. Cl. C07c *67/00*
U.S. Cl. 260—494 **8 Claims**

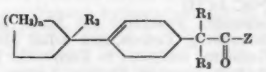
α-Acyloxyacetic acids are produced by the reaction of formaldehyde, a carboxylic acid and carbon monoxide in the presence of catalytic amounts of hydrogen iodide or bromide.

3,801,628
CYCLOHEXENYL ACETIC ACID COMPOUNDS

Michel Vincent, Bagneux, Georges Remond, Paris, and Jean-Claude Poignant, Wissous, France, assignors to Societe en nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,659, now Patent No. 3,697,588. Divided and this application May 8, 1972, Ser. No. 251,515
Int. Cl. A61k *27/00*; C07c *103/30*
U.S. Cl. 260—500.5 H **4 Claims**

Cyclohexenyl acetic acid compounds of the formula



wherein:

R_1, R_2 and R_3 are hydrogen or lower alkyl;
n is 1 to 4; and
X is hydroxyl, amino, alkylamino or hydroxylamino.

These compounds possess analgesic and antiinflammatory properties.

3,801,629
SEPARATION OF ACETIC ACID, WATER AND FORMIC ACID

René Léon Aga, Grimbergen, and Henri Robert Debus, Meise, Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Mar. 29, 1971, Ser. No. 129,246
Claims priority, application Great Britain, July 31, 1970, 37,199/70
Int. Cl. C07c *51/44, 67/06*
U.S. Cl. 260—541 **8 Claims**

A mixture of formic acid, water and acetic acid are separated by continuous distillation in a column still by adding the feed at least above the tenth theoretical plate and adding an esterifying agent for the formic acid consisting of an alcohol or an ester of the alcohol in which the alcohol has at least three carbon atoms and preferably 3 to 8 carbon atoms, and the acid of the ester being higher boiling than formic acid, the esterifying agent being added in an esterification zone disposed at least one theoretical tray above the feed level whereby concentrated acetic acid accumulates at the bottom of the column and substantially all of the formic acid and water pass overhead as the formic ester; the ester continuously formed of the formic acid serves as a water entraining agent and passes overhead of the column with the water.

3,801,630

DIOXOCYCLOHEXANECARBOXANILIDE INSECTICIDES AND ACARICIDES

Robert Eugene Diehl, Trenton, Michael Stanley Schrider, Piscataway, and Sidney Kantor, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 106,933, Jan. 15, 1971. This application Nov. 11, 1971, Ser. No. 197,967

Int. Cl. C07c *103/86*

U.S. Cl. 260—551 S 5 Claims

The present invention relates to certain novel carboxanilide insecticidal and acaricidal methods and compositions. It further relates to certain novel carboxanilides employed as active ingredients therein.

3,801,631

2'-HYDROXY-5'-[1-HYDROXY - 2 - (2-METHYL-1-PHENYL - 2 - PROPYLAMINO)ETHYL]METHANESULFONANILIDE AND ITS SALTS

William T. Comer and Herbert R. Roth, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed Feb. 16, 1972, Ser. No. 229,202

Int. Cl. C07c *143/74*

U.S. Cl. 260—501.19 6 Claims

2' - hydroxy-5'-[1-hydroxy-2-(2-methyl-1-phenyl-2-propylamino)ethyl]methanesulfonanilide is a potent anorexigenic agent and orally active bronchodilator.

3,801,632

PROCESS FOR THE CONTINUOUS PRODUCTION OF THE DISODIUM SALTS OF m-BENZENEDISULFONIC ACID

Rudolf Lademann, Frankfurt am Main, Karl Weisenberger, Schonberg, Taunus, and Adolf Metzger, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 9,393, Feb. 6, 1970. This application Dec. 27, 1971, Ser. No. 212,713

Claims priority, application Germany, Feb. 8, 1969, P 19 06 399.1

Int. Cl. C07c *143/24*

U.S. Cl. 260—505 N 1 Claim

For the manufacture of the disodium salts of m-benzenedisulfonic acid, the acid is neutralized in a stirred bed of solid substance. As such stirred bed of solid substance there is used the salt which has been formed by neutralization and is being stirred by a mechanical device, for example, a screw conveyor, paddle screw or stirrer.

3,801,633

N-SUBSTITUTED AMINO ACIDS HAVING ANTIVIRAL EFFECTS

Shigeshi Toyoshima and Seizo Kanao, Tokyo, Takeshi Toyoda, Sagamihara, and Tadashi Suyama, Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,993

Claims priority, application Japan, Sept. 6, 1969, 44/70,716

Int. Cl. C07c *103/30*

U.S. Cl. 260—518 R 4 Claims

The following N-substituted amino acids were found to combat infection with influenza virus in vivo:

N-α-naphthylacetylleucine
N-4-nitrophenoxyacetyl-4-nitrophenylalanine
N-carboxymethylphenylalanine
N-benzylphenylalanine
N-furfurylphenylalanine
N-β-naphthylaminomethylalanine
N-β-naphthylaminomethylmethionine
6-(β-naphthylaminomethyl)-aminocaproic acid
N-lauroylphenylalanine
N-4-toluenesulfonyltryptophan
N-2-fluoroensulfonyl-β-alanine
N-2-fluorenesulfonylvaline
N-2-fluorenesulfonyl-4-nitrophenylalanine

3,801,634

MANUFACTURE OF ACRYLIC ACID

Richard Krabetz, Kirchheim, Carl-Heinz Willersinn, Ludwigshafen, Heinz Engelbach, Limburgerhof, Hermann Wistuba, Mannheim, Ulrich Lebert, Ludwigshafen, and Walter Frey, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,178

Claims priority, application Germany, Nov. 18, 1970, P 20 56 614.7

Int. Cl. C07c *57/04, 51/32*

U.S. Cl. 260—533 N 6 Claims

The oxidation of propylene to acrylic acid in two stages via acrolein using conventional oxidation catalysts proceeds particularly well when the activity of the catalysts in the two stages increases in the direction of flow of the reaction gases and the off-gases from the second stage are recycled to the first stage as diluting gases.

3,801,635

N-(2-METHYL-4-CHLOROPHENYL)-N',N'-DIMETHYLTHIOUREA

Dieter Duerr, Bottmingen, and Volker Dittrich, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 680,272, July 6, 1967, which is a division of application Ser. No. 532,863, Mar. 9, 1966, now Patent No. 3,395,233. This application Feb. 9, 1972, Ser. No. 224,958

Claims priority, application Switzerland, Mar. 30, 1965, 4,389/65

Int. Cl. C07c *157/08*

U.S. Cl. 260—552 R 1 Claim

There are provided novel N-2-alkyl-4-halophenyl-N'-alkyl- or N'-alkoxy-thioureas optionally further substituted by lower alkyl at the N'-position. These compounds are useful as pesticides.

3,801,636

3,4,5-TRI-SUBSTITUTED CINNAMIDES

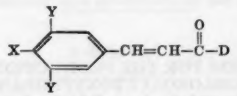
Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,737

Int. Cl. C07c *103/28*

U.S. Cl. 260—558 A 12 Claims

Covers compounds of the formula:



where X is selected from the group consisting fo NH_2, NH-loweralkyl and N(loweralkyl)$_2$; each Y is a halogen selected from the group consisting of chlorine, bromine, fluorine and iodine; and D is an organic radical containing a nitrogen atom; and pharmaceutically-acceptable addition salts thereof. Also covers their use as anti-depressant drugs. In addition covers various novel intermediates used in preparing the above compounds.

3,801,637

COMPOUNDS OF 2',5' - SUBSTITUTED NITRO-ANILIDES OF SUBSTITUTED NITROSALICYLIC ACID

William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 186,514, Oct. 4, 1971. This application Aug. 1, 1972, Ser. No. 277,075

Int. Cl. C07c *103/26*

U.S. Cl. 260—559 S 9 Claims

A class of organic compounds is disclosed comprising substituted nitroanilides of 3-tert.-butyl-6-methyl-5-nitrosalicylic acid, characterized in that the anilide portion is nitrated in the 4' position and is further substituted only in either the 2' or 5' positions or in both the 2' and 5' positions. Moreover, the substituents themselves for the 2' and 5' positions must be selected from a small number of monovalent substituents. Such compounds are useful in the control of microorganisms and as insecticides. When the substituents for the 2' position are further restricted to a still, smaller selected number, the resulting compounds have markedly superior results as anthelmintics as compared to other compounds of the present invention, that is, therapeutic-agents for destroying parasitic life, such as intestinal worms.

3,801,638

TRIACRYLYLDIETHYLENETRIAMINE, METHOD OF PRODUCING THE SAME, AND PHOTO-POLYMERIZATION PROCESS AND SYSTEM UTILIZING THE SAME

Edward J. Cerwonka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Original application July 28, 1969, Ser. No. 845,519. Divided and this application Mar. 12, 1971, Ser. No. 123,884

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 N 5 Claims

A new monomer triacrylyldiethylenetriamine is prepared by the reaction of diethylenetriamine acrylyl chloride and sodium hydroxide, the reaction yielding the desired monomer, sodium chloride and water. The monomer, triacrylyldiethylenetriamine, is useful in the photopolymerization process as high speed polymerizable monomer in conjunction with a colloidal carrier and a light sensitive ferric salt. Modification of the reactants in the above process allow for the production of polyacrylyl and polymethacrylyl polyethylene polyamines containing 2 to 4 ethylene groups.

3,801,639

CATALYTIC HYDRATION OF ACRYLONITRILE TO ACRYLAMIDE

Anthony Joseph Fanelli, Stamford, Gerlinde Metzler Blank, Wilton, and Francis Clyde Rauch, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 2, 1972, Ser. No. 259,173

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N 14 Claims

A homogeneous catalyst system consisting of a transition metal compound and a diaryl or dialkyl phosphine oxide is used in solution with water and a selected nitrile for hydration of the nitrile to make a corresponding amide. In a preferred embodiment acrylonitrile is hydrated with water in presence of rhodium trichloride and diphenyl phosphine oxide or diethyl phosphine oxide to make acrylamide.

3,801,640

PROCESS FOR REDUCING NITROSUBSTRATES TO CORRESPONDING AMINES BY USE OF HOMOGENEOUS NICKEL CATALYSTS IN THE PRESENCE OF HYDROGEN AND CARBON MONOXIDE

John F. Knifton, Poughquag, N.Y., assignor to Texaco, Inc., New York, N.Y.

No Drawing. Filed June 8, 1972, Ser. No. 260,948

Int. Cl. C07c *85/10*

U.S. Cl. 260—563 D 14 Claims

This invention concerns the use of homogeneous nickel catalysts to reduce nitroparaffinic and nitroaromatic substrates in the presence of carbon monoxide and hydrogen to their corresponding amines.

3,801,641

QUATERNARY AMMONIUM SALTS

Pierre H. Payot and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 29, 1967, Ser. No. 642,215

Int. Cl. C07c *87/30*

U.S. Cl. 260—567.6 M 11 Claims

Quaternary ammonium salts in which three of the bonds of the quaternary ammonium nitrogen are occupied by aliphatic hydrocarbon radicals at least one of which has from 8 to 24 carbon atoms and the fourth bond is occupied by an aliphatic hydrocarbon radical of at most 6 carbon atoms which radical is substituted by a phenyloxy or phenylthio group the benzene nucleus of which is in turn substituted by an alkanoyl, carboxyl, alkoxycarbonyl, α-hydroxyalkyl or acylated α-hydroxyalkyl radical or by a functional radical which may be converted by hydrolysis to an alkanoyl group, such functional radicals being especially acetal, acylal or ketal groups; which quaternary ammonium salts are distinguished by antimicrobial properties, especially against phytopathogenic fungi, while being at the same time, surprisingly more generally tolerated by plants of diverse kinds, in contrast to known phenoxy- and phenylthioalkyl ammonium salts which are harmless only to certain selected plant varieties; a method of combatting microorganisms, and more especially for protecting plants against phytopathogenic fungi; compositions which contain the novel quaternary ammonium salts as active ingredients.

3,801,642

PREPARATION OF AMINES FROM METAL ARYLOXIDES

Calvin J. Worrel, Detroit, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 748,918, July 31, 1968, now Patent No. 3,626,010. This application Sept. 11, 1970, Ser. No. 71,391

Int. Cl. C07c *85/02, 85/06*

U.S. Cl. 260—581 13 Claims

Metal aryloxides in which the metal is an alkali metal, alkaline earth metal, aluminum, zinc, titanium, hafnium, zirconium, boron, lead, or niobium, are converted to aryl amines by reaction with either ammonia, hydrazine or primary or secondary amines at temperatures from 200–500° C. The reaction is promoted by the addition of a Friedel-Crafts catalyst such as aluminum chloride.

3,801,643

PTERIDINE DERIVATIVES AND METHOD

Hamish Christopher Swan Wood, Bearsden, Scotland, and Alexander Stuart, Bromley, England, assignors to The University of Strathclyde, Glasgow, Scotland

No Drawing. Application July 6, 1971, Ser. No. 160,216, now Patent No. 3,725,408, which is a division of application Ser. No. 794,786, Jan. 28, 1969, now Patent No. 3,635,978. Divided and this application Oct. 27, 1972, Ser. No. 301,311

Int. Cl. C07c *97/02*

U.S. Cl. 260—584 A 3 Claims

A compound 2-amino-4-hydroxy-6-hydroxymethyl-7,7-dimethyl-7,8-dihydropteridine, or tautomeric forms thereof and pharmaceutically acceptable salts thereof. The compound is useful as a bacteriostat and in antibacterial products. The compound has useful activity against *Cl. perfringens* and *Derm. dermatonomous.*

3,801,644

SUBSTITUTED-o-HYDROXY-ω-(METHYLSULFINYL) ACETOPHENONES AND PROCESS FOR PRODUCING SAME

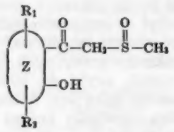
Maxmilian von Strandtmann, Rockaway, John Shavel, Jr., Mendham, Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,947

Int. Cl. C07c *49/82*

U.S. Cl. 260—592 13 Claims

The present invention relates to substituted-o-hydroxy-ω-(methylsulfinyl) acetophenones of the Formula I



wherein Z is an aromatic or heteroaromatic nucleus such as benzene, naphthalene, anthracene, phenanthrene, pyridine, quinoline, isoquinoline, carbazole, benzothiazine, and the like, wherein R_1 is halogen, lower alkoxy, hydroxy, acetamino, alkyl, aralkyl, or aryl; R_2 is hydrogen, halogen, hydroxy, alkyl, aralkyl, or aryl; or R_1 and R_2 taken together may form a 1,3-dioxole ring. The compounds of the present invention are useful as intermediates for the production of chromones which exhibit antiallergenic properties.

3,801,645

CHLORINATION OF LOWER ALIPHATIC ALDEHYDES

David Alan Dalman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,664

Int. Cl. C07c *47/14*

U.S. Cl. 260—601 H 4 Claims

Propionaldehyde, butyraldehyde and valeraldehyde are chlorinated to form the α,α-dichloroaldehyde by the use of sulfuryl chloride in the presence of a catalyst of diphenyl sulfide.

3,801,646

STARTUP OF RHODIUM CATALYZED HYDROFORMYLATION REACTIONS

Frank B. Booth, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,117

The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed

Int. Cl. C07c *47/02, 47/28, 47/52*

U.S. Cl. 260—604 HF 8 Claims

Hydroformylations of hydrocarbon olefins in the presence of rhodium or iridium catalysts are started up or initiated by introducing carbon monoxide into contact with the catalyst prior to introduction of the hydrogen. The carbon monoxide is supplied in an amount sufficient to expose the catalyst to a pressure of at least 1 and preferably at least 10 atmospheres prior to introducing the hydrogen into contact with the catalyst. It has been found that when the catalyst is first contacted with carbon monoxide in this fashion, a higher order of reactivity is achieved than when the reverse sequence is employed. In a typical embodiment, propylene is hydroformylated to butyraldehydes by contacting the propylene with a liquid reaction medium maintained under a carbon monoxide and hydrogen pressure at a temperature of from 30° to 300° C. and a pressure from 1 to 10,000 atmospheres wherein the reaction has been initiated by introducing the carbon monoxide before introduction of the hydrogen.

3,801,647

NITRO DERIVATIVES OF ISOPROPENYLCARBORANE

William E. Hill, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 5, 1969, Ser. No. 798,269

Int. Cl. C07d *105/02*

U.S. Cl. 260—606.5 B 6 Claims

The olefinic carborane, isopropenylcarborane, is reacted with N_2O_4 in an ether solvent to yield products useful as burning rate catalyst for double-base propellants.

3,801,648

SUBSTITUTED ALLYL PHENOLS

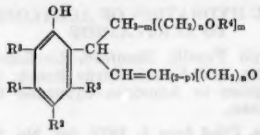
Edward D. Weil, Lewiston, and Hans L. Schlichting, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application May 3, 1968, Ser. No. 736,894, now Patent No. 3,639,487, which is a division of application Ser. No. 260,076, Feb. 20, 1963, now Patent No. 3,385,899. Divided and this application May 10, 1971, Ser. No. 142,052

Int. Cl. C07c *149/32*

U.S. Cl. 260—609 F 8 Claims

A compound of the formula



wherein:

(a) R^1, R^2, R^3 and R^5 are selected from the group consisting of hydrogen, chlorine, lower alkoxy, nitro, and lower alkyl;

(b) R^4 is selected from the group consisting of phenyl, nitrophenyl, chlorophenyl, and hydroxyphenyl; and

(c) *m*, *n*, and *p* are integers from 0 to 1, the sum of *m* and *p* being 1.

3,801,649
HYDROXYMETHYLATED DERIVATIVES OF RESIN ACIDS

John B. Lewis and Glen W. Hedrick, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application May 12, 1970, Ser. No. 36,672, now Patent No. 3,702,338. Divided and this application Mar. 15, 1972, Ser. No. 235,075
Int. Cl. C07c *43/18*
U.S. Cl. 260—611 B 1 Claim

The preparation of a new series of polyols derived from naval stores is described and their use in polyurethanes is demonstrated. Small amounts of these resin acid derivatives give added strength to polyurethane films prepared from propylene glycol polyethers and could very well be useful intermediates for industry. Increasing amounts of these new glycols blended with trimethylolpropane, 1,4-butanediol, and a polypropylene glycol and reacted with TDI gave clear strong films with tensile strengths around 5000 p.s.i. Further addition resulted in harder, more brittle films. Because of the brittle character of most of the films, use of the polymers probably would be limited to coating applications. On the other hand, change in the formulation in one instance resulted in films having fair low temperature and elastomeric properties. The diisocyanate requirements are reduced when the polyols are used as a component of the glycol system.

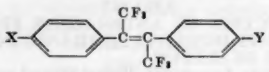
3,801,650
ALPHA-BETA-BIS(TRIFLUOROMETHYL) STILBENES

William J. Middleton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Oct. 10, 1968, Ser. No. 766,631, now Patent No. 3,683,009. Divided and this application Apr. 26, 1972, Ser. No. 247,699
Int. Cl. C07c *43/28*
U.S. Cl. 260—612 R 5 Claims

Described and claimed are:

(1) The α,β-bis(trifluoromethyl)stilbenes of the formula



wherein X and Y, which may be the same or different, are H or OR, R being hydrogen, alkyl, hydroxyalkyl, dialkylaminoalkyl (including morpholinoalkyl, piperidinoalkyl and pyrrolidinoalkyl) or an acyl function of a carboxylic acid, said acyl function bearing as substituents a hydrogen atom or an alkyl, cycloalkyl, cycloalkenyl, hydroxyalkyl, dialkylaminoalkyl or aryl group, the total carbon content of each R substituent not exceeding 12 carbon atoms;

(2) pharmaceutical compositions of the aforementioned α,β-bis(trifluoromethyl)stilbenes; and

(3) the use of the compounds and compositions of this invention as antifertility agents.

3,801,651
PROCESS FOR THE PREPARATION OF PYROCATECHOL AND ITS MONOETHERS

Gerhard Adolphen, Karlfried Wedemeyer, and Wilhelm Sutter, Cologne, Germany, assignors to Bayer AG, Leverkusen, Germany

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,219
Claims priority, application Germany, Dec. 28, 1970, P 20 64 097.5
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 D 9 Claims

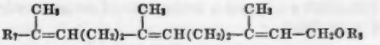
Pyrocatechol and its monoethers are prepared by dehydrogenating the corresponding cyclohexanone compounds over palladium on a lithium-aluminum spinel carrier at temperatures of 150° C. to 300° C.

3,801,652
PESTICIDES

Rudolf Rüegg, Bottmingen, Switzerland, and Peter Schmialek, Berlin-Dahlem, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 38,915, May 19, 1970, now Patent No. 3,665,040, which is a division of application Ser. No. 696,987, Jan. 11, 1968, now Patent No. 3,541,154, which is a division of application Ser. No. 301,968, Aug. 14, 1963, now Patent No. 3,429,970, which is a continuation-in-part of abandoned application Ser. No. 168,834, Jan. 25, 1962, which in turn is a continuation-in-part of abandoned application Ser. No. 196,521, May 21, 1962. This application Apr. 5, 1972, Ser. No. 241,392
Claims priority, application Germany, Feb. 2, 1961, Sch 29,159; Switzerland, May 24, 1961, 6,019/61
Int. Cl. C07c *43/14*
U.S. Cl. 260—614 R 1 Claim

Compounds represented by the formula



useful for hindering or impeding the metamorphosis and reproduction of arthropodes as well as being intermediates therefor.

3,801,653
MANUFACTURE OF ACETYLENE MONOALCOHOLS

Heinrich Pasedach, Knut Bittler, Diethard Francke, and Werner Hoffmann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,401
Claims priority, application Germany, Apr. 21, 1970, P 20 18 971.3
Int. Cl. C07c *33/04, 33/06, 35/08*
U.S. Cl. 260—617 E 9 Claims

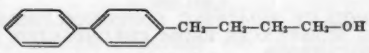
Manufacture of acetylene monoalcohols by reacting acetylenes with carbonyl compounds in the presence of anion exchangers, a nitrogen compound and/or a dialkyl sulfoxide. The compounds manufactured by the process of the invention are valuable intermediates in the manufacture of solvents, odorants, anti-corrosives, vitamins and plant protection agents.

3,801,654
4-(4)-BIPHENYLYL)-1-BUTANOL

Ernst Seeger, Wolfhard Engel, Helmut Teufel, and Gunther Engelhardt, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing, Filed Oct. 4, 1972, Ser. No. 294,940
Claims priority, application Germany, Oct. 15, 1971, P 21 51 312.2
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 1 Claim

The compound 4-(4'-biphenylyl)-1-butanol of the formula



which is useful as an antiphlogistic.

3,801,655
METHOD OF PREPARING MONOALCOHOLS FROM p-MENTHANE-3,4-DIOL AND p-MENTHANE-1,2-DIOL

Albert B. Booth, Jekyll Island, Ga., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 757,463, Sept. 4, 1968. This application Oct. 14, 1971, Ser. No. 189,367
Int. Cl. C07c *35/12*
U.S. Cl. 260—631 H 6 Claims

Disclosed is a method of preparing monoalcohols from the diols, p-menthane-3,4-diol and p-menthane-1,2-diol

by contacting the diol with a hydrogenation catalyst in the presence of hydrogen.

3,801,656
CATALYTIC HYDRATION OF OLEFINS

Orville D. Frampton, Wyoming, and Julian Feldman, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 685,322, Nov. 24, 1967. This application Sept. 30, 1971, Ser. No. 185,425

Int. Cl. C07c *29/04*

U.S. Cl. 260—641 **8 Claims**

Ethanol is prepared by contacting ethylene and liquid water or an aqueous solution of an inert solvent with a catalytic amount of a prereduced catalyst consisting of molybdenum oxide on a zirconia support at 250°–350° C., 750–5000 p.s.i., and a mole ratio of water to ethylene of 1:5 to 25:1.

3,801,657
DIRECT CRYSTALLIZATION OF ALUMINUM HYDRIDE FROM TOLUENE-ETHER

James A. Scruggs, West Haven, Conn., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 15, 1969, Ser. No. 791,526

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **10 Claims**

Crystalline aluminum hydride can be produced by direct precipitation from ether-toluene solutions if a certain ether-toluene ratio and proper reactant ($LiAlH_4$, $LiBH_4$ and $AlCl_3$) concentrations are employed together with proper distillation procedures. The crystalline product formed thereby possesses improved properties for use in propellant compositions.

3,801,658
ISOMERIZATION PROCESS

Peter John Nicholas Brown, Epsom, England, assignor to BP Chemicals International Limited, London, England

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,248

Claims priority, application Great Britain, Mar. 16, 1971, 6,973/71

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R **4 Claims**

This invention relates to a process for the isomerization of dichlorobutenes using a catalyst composition comprising copper compounds and alkyl or aryl substituted ureas.

3,801,659
METHOD OF REMOVING CORROSION-PROMOTING SUBSTANCES FROM CHLORINATED HYDROCARBONS

Jan Andérs Dahlberg, Skoghall, and Virve Oivikki Christiansen, Karlstad, Sweden, assignors to Uddeholms Aktiebolag, Uddeholms, Sweden

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,529

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 S **1 Claim**

Corrosion-promoting substances are removed from a chlorinated hydrocarbon, such as trichloroethylene and perchloroethylene by treating the chlorinated hydrocarbon with an anion-exchanger. The anion-exchanger is regenerated by being treated with a neutral, or slightly acid, aqueous solution containing a non-corrosion-promoting anion, such as the bicarbonate ion, the chromate ion, the phosphate ion, the monohydrogen phosphate ion and the dihydrogen phosphate ion. The regenerated anion-exchanger is now dried to a water content of less than 10% by weight, and is now ready for use.

3,801,660
POLYMERIZABLE VINYL CHLORIDE FROM 1,2-DICHLORETHANE PYROLYSIS PRODUCTS

Guillaume Coppens, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Continuation of abandoned application Ser. No. 760,847, Sept. 19, 1968. This application Apr. 28, 1971, Ser. No. 138,364

Int. Cl. C07c *21/02*

U.S. Cl. 260—656 R **3 Claims**

Pyrolysis products of 1,2-dichlorethane are cooled and a low-boiling gaseous fraction thereof is separated from a liquid fraction. Butadiene in the liquid fraction is removed therefrom prior to recombining said fraction with the gaseous fraction in a distillation column from which hydrogen chloride gas is withdrawn from the head and the tails are conducted to a second such column. Vinyl chloride withdrawn from the head of the second column is directly polymerizable.

3,801,661
SELECTIVE PROCESS FOR THE CONTINUOUS DYHYDROGENATION OF NONAROMATIC HYDROCARBONS

Peter J. Hart and Hans R. Friedli, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 11, 1972, Ser. No. 270,845

Int. Cl. C07c *5/20*

U.S. Cl. 260—666 A **10 Claims**

A selective process for the continuous dehydrogenation of nonaromatic C_3–C_5 hydrocarbons to derivatives having a higher degree of unsaturation comprising passing a mixture of the hydrocarbon, steam and H_2S through a sulfided metal catalyst at a conversion below about 70%.

3,801,662
PRODUCTION OF ANTHRACENE FROM 2-METHYL DIPHENYL METHANES IN PRESENCE OF SULFUR

Hermann Wolz, Leverkusen, Rupert Wenzel and Manfred Martin, Cologne, and Gerhard Scharfe, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,571

Claims priority, application Germany, Apr. 14, 1972, P 22 18 004.7

Int. Cl. C07c *5/18, 15/28*

U.S. Cl. 260—668 F **10 Claims**

In the preparation of anthracenes by the thermal conversion of a 2-methyl diphenyl methane, the improvement which comprises effecting the thermal conversion in the presence of a small amount of sulfur in elementary or combined form. The temperature is preferably about 400 to 800° C. and the sulfur may be organic or inorganic, e.g. sulfur vapor or carbon disulfide.

3,801,663
DEHYDROGENATION OF ALKYLATED AROMATIC HYDROCARBONS

George P. Knox, P.O. Box 2673, Freeport, Tex. 77541; and Gene C. Cutler, 533 Oak Drive, Lake Jackson, Tex. 77566

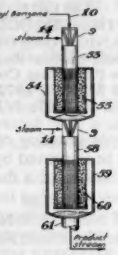
Filed July 13, 1971, Ser. No. 162,239

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 R **7 Claims**

An improved process for the dehydrogenation of alkyl-substituted aromatic compounds to produce alkenyl substituted aromatics, e.g. styrene, whereby high temperature steam is mixed with the compound to be dehydro-

genated by employing a multiple stream exit mixing device. By employing such a mixing device it is possible to use steam having a temperature of from 825° C. to

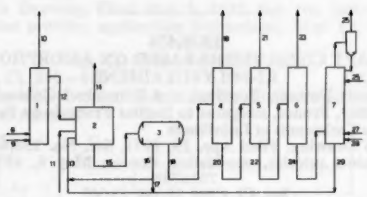


about 1000° C. while at the same time increasing the conversion without sacrificing the yield to the desired product.

3,801,664
STYRENE SEPARATION FROM ETHYLBENZENE
George C. Blytas, Houston, Tex., assignor to Shell Oil Company
No Drawing. Filed Mar. 16, 1973, Ser. No. 342,114
Int. Cl. C07c *7/16*
U.S. Cl. 260—669 A **4 Claims**

Styrene is separated from ethylbenzene in high yield and purity by a process which comprises (a) extraction with a two-phase solvent system in which the extracting phase is a concentrated anhydrous cuprous nitrate/propionitrile solution, wherein the styrene is selectively complexed with the cuprous ion, and the ethylbenzene counter solvent is a C_5–C_{18} paraffin; (b) separation of the propionitrile solution phase containing the styrene-cuprous ion complex from the paraffin phase and (c) decomposing the styrene-cuprous ion complex to recover the styrene therefrom.

3,801,665
MANUFACTURE OF UNBRANCHED ALKYL BENZENES
Natale Bertolini and Benedetto Calcagno, Milan, and Marcello Ghirga, Bresso, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy
Filed Aug. 2, 1972, Ser. No. 277,199
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 B **5 Claims**

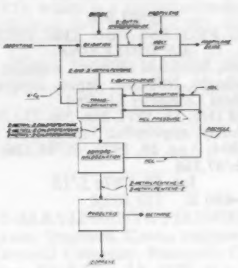


In a process for alkylation of benzene, use is made of an activated catalytic complex obtained by blending the spent catalytic sludge discharged from the alkylation reactor with the products of a treatment of the high boiling fractions obtained in the alkylation with hydrogen chloride, benzene and aluminium trichloride.

3,801,666
CONCENTRATED CUPROUS NITRATE/PROPIONITRILE SOLUTIONS AS COMPLEXING AGENTS FOR OLEFIN SEPARATIONS
George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
No Drawing. Filed Mar. 16, 1973, Ser. No. 342,115
Int. Cl. C07c *11/00*
U.S. Cl. 260—677 A **6 Claims**

Anhydrous cuprous nitrate/propionitrile solutions having high concentrations of cuprous ion, e.g., 15–26% by weight cuprous ion, and correspondingly low concentrations of cupric ion, e.g., 2–5% by weight cupric ion, and the preparation thereof by (1) contacting quantities of cupric nitrate and metallic copper sufficient to yield no more than about 4% cuprous ion in propionitrile solvent at elevated temperatures to produce a dilute propionitrile solution wherein the copper is present substantially in the cuprous form and (2) concentrating the dilute propionitrile solution. The concentrated cuprous nitrate/propionitrile solutions, thusly prepared, are useful in affecting the separation of olefinically unsaturated hydrocarbons from hydrocarbons of lesser degrees of unsaturation.

3,801,667
CYCLIC ISOPRENE PROCESS
Abraham Schneider, Philadelphia, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
Filed Nov. 9, 1971, Ser. No. 196,938
Int. Cl. C07c *11/18*
U.S. Cl. 260—680 C **3 Claims**



A multi-step synthesis for the production of isoprene is provided wherein certain by-products are recycled in order to achieve a balanced, economical process. The process is principally characterized by the steps of oxidizing isobutane to form t-butyl hydroperoxide which is reacted with propylene to give t-butyl alcohol and the valuable by-product propylene oxide. The alcohol, after conversion to t-butyl chloride is reacted with methylpentanes to give isobutane and methylchloropentanes. These latter compounds are then dehydrochlorinated to yield HCl and methylpentenes which are pyrolyzed to form isoprene.

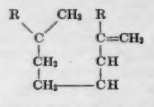
The isobutane co-produced with the methylchloropentanes is desirably recycled to the first stage oxidation step, while the HCl formed in the next-to-last step may be employed in the further formation of t-butyl chloride.

3,801,668
PROCESS FOR THE PRODUCTION OF SQUALENE-TYPE HYDROCARBONS
Akira Komatsu, Susumu Akutagawa, and Taichi Someya, Tokyo, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan
No Drawing. Filed May 23, 1973, Ser. No. 362,986
Int. Cl. C07c *11/00, 11/14*
U.S. Cl. 260—677 R **22 Claims**

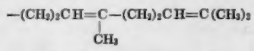
Production of squalene-type hydrocarbons by dimerizing conjugated diene compounds in the presence of a cata-

lyst system consisting of a palladium compound, a ligand of the formula MR'_3 (where M represents P or As, and R' represents a saturated or unsaturated aliphatic or aromatic hydrocarbon group) and a strong alkaline agent, in an alcohol in the presence of a compound having ether bond(s).

A squalene-type hydrocarbon of the formula



where R is $-(CH_2)_2CH=C(CH_3)_2$ or



3,801,669
PURIFICATION OF HYDROCARBONS
Harold F. Christmann, Seabrook, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,364
Int. Cl. C07c *7/00*
U.S. Cl. 260—680 E **17 Claims**

Gaseous streams containing carbonyl compounds are reduced in carbonyl compounds by reacting a vapor phase with catalyst comprising cement. Reactor effluent from oxidative dehydrogenation reaction to produce butadiene-1,3 is reacted with portland cement catalyst to remove carbonyl compounds.

3,801,670
CATALYTIC PROCESS FOR THE PRODUCTION OF DIOLEFINS
Tatsuo Shiraishi, Shinkichi Shimizu, Akihiko Atsumi, and Hiroshi Ichihashi, Niihama, Japan, assignors to Sumitomo Chemical Company Limited
Filed Dec. 23, 1971, Ser. No. 211,608
Claims priority, application Japan, Dec. 25, 1970, 45/129,004; Aug. 28, 1971, 46/66,136; Aug. 30, 1971, 46/67,166
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **15 Claims**

A catalytic process for production of diolefins having 4 to 8 carbon atoms by vapor phase oxidation which comprises contacting monoolefins having 4 to 8 carbon atoms and oxygen with a solid catalyst composition comprising a catalyst system of the formula:

$$Tl_aP_bMo_cFe_dBi_eX_fY_gO_h$$

wherein *a*, *b*, *c*, *d*, *e* and *h* each represents the number of the respective atoms, X is one or more of Ni, Co, Mg and Mn, *f* represents the total number of one or more atoms of Ni, Co, Mg and Mn, Y is one or more of Cu, Ca, Sr, Zn, Cd, Sn, Be, Cr and Pb, and *g* represents the total number of one or more atoms of Cu, Ca, Sr, Zn, Cd, Sn, Be, Cr and Pb, provided that, in case of *c* being 12, *a* is 2 or less but not 0, *b* is 0 to 5, *d* is 0.1 to 20, *e* is 0.1 to 5, *f* is 2 to 15, *g* is 0 to 12, and *h* is decided depending on the number of the other atoms and usually from 38.3 to 128. By such process, diolefins are produced in a high selectivity and an excellent yield.

3,801,671
OXIDATIVE DEHYDROGENATION OF ORGANIC COMPOUNDS
Robert M. Marsheck, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 30, 1972, Ser. No. 258,068
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **5 Claims**

The oxidative dehydrogenation of paraffinic hydrocarbons to diolefins can be improved by effecting such dehydrogenation in the presence of a fluidized mixed catalyst system consisting essentially of at least one catalyst active for the conversion of paraffins in admixture with at least one catalyst active for the conversion of monoolefins.

3,801,672
OXIDATIVE DEHYDROGENATION PROCESS AND CATALYSTS
Laimonis Bajars, Princeton, N.J., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Continuation-in-part of abandoned application Ser. No. 72,195, Sept. 14, 1970. This application Dec. 20, 1972, Ser. No. 316,958
Int. Cl. C07c *5/18*
U.S. Cl. 260—683.3 **19 Claims**

Hydrocarbons can be dehydrogenated by oxidative dehydrogenation over unique catalyst that contains at least Mg, Cr, and O preferably as the oxides to obtain high yields of the desired products, e.g., n-butane butenes and butadienes. The addition of S, W or a Group IV element further enhances the yields. A principal advantage of the present process over conventional dehydrogenation is the successful use of the alkane in a continuous process to give results as good or better than those presently obtained in cyclic non-oxidative dehydrogenation processes.

3,801,673
PROCESS FOR PREPARING POLYCARBONATE ALLOYS
William J. J. O'Connell, Evansville, Ind., assignor to General Electric Company
No Drawing. Filed Jan. 3, 1972, Ser. No. 215,151
Int. Cl. C08g *39/10*
U.S. Cl. 260—873 **7 Claims**

A process for preparing an alloy of a polycarbonate and an olefin polymer. The process involves melt blending two polymers having melt viscosities within 50 percent of each polymer at the temperature and shear rate employed for melt blending.

3,801,674
GRAFT COPOLYMERS BASED ON AMORPHOUS 1,2-POLYBUTADIENE
Francois Dawans, Bougival, and Emmanuel Goldenberg, Poissy, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants
No Drawing. Filed Apr. 29, 1971, Ser. No. 138,811
Claims priority, application France, May 6, 1970, 7016708
Int. Cl. C08f *15/04, 15/40*
U.S. Cl. 260—879 **6 Claims**

Graft copolymers comprise amorphous 1,2-polybutadiene and at least one homo- or co-polymer of a mono- or di-olefinic hydrocarbon. They are manufactured by reacting amorphous 1,2-polybutadiene with a mono- or di-olefin or a polymer thereof, in the presence of a conventional polymerization catalyst, preferably a coordination catalyst.

3,801,675

POLYMER BLEND CONTAINING POLYACRYLIC ACID, POLYVINYL ALCOHOL, AND A POLYACRYLATE

Gordon D. Russell, Chateauguay Heights, Quebec, Canada, assignor to Johnson & Johnson

Original application Feb. 20, 1970, Ser. No. 13,174, now Patent No. 3,743,536. Divided and this application May 1, 1972, Ser. No. 249,424

Int. Cl. C08f 29/36

U.S. Cl. 260—901 9 Claims

Absorbent product of improved resistance to discoloration and blocking on sterilization. The product comprises a nonwoven fabric treated with a polycarboxylic acid, a polyvinyl alcohol and an acrylic acid polymer, such as a polyacrylate.

3,801,676

POLYETHERPOLYTHIOLS, METHOD OF PREPARATION AND MIXTURES OF POLYTHIOETHER-POLYTHIOLS WITH EPOXIDE RESINS

Richard A. Hickner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 29, 1968, Ser. No. 771,648, now abandoned. Divided and this application Aug. 12, 1971, Ser. No. 171,332

Int. Cl. C07f 9/02

U.S. Cl. 260—928 14 Claims

Polythioetherpolythiols with a thiol functionality greater than 2 are made by reacting a polythiol with a triene, a tetraene or mixtures thereof or mixtures of the polyenes with a diene, in the presence of a free radical generating catalyst. The polythioetherpolythiols can be reacted with epoxide resins to effect cures of the latter.

3,801,677

BICYCLIC ESTERS OF PHOSPHORUS ACID

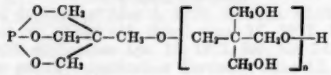
Charles F. Baranauckas and Irving Gordon, Niagara Falls, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Continuation of abandoned application Ser. No. 871,256, Nov. 5, 1969. This application May 8, 1972, Ser. No. 251,505

Int. Cl. C07d 5/04; C07f 9/38

U.S. Cl. 260—937 1 Claim

A bicyclic ester of phosphorus acid having the formula



wherein n is 1 or 2.

3,801,678

PHOSPHONOPROPIONIC ACID AMIDES

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed May 2, 1972, Ser. No. 249,640

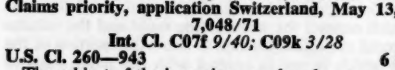
Claims priority, application Switzerland, May 13, 1971, 7,048/71

Int. Cl. C07f 9/40; C09k 3/28

U.S. Cl. 260—943 6 Claims

The subject of the invention are phosphorus compounds of the formula

(I)



wherein R_1 and R_2 each denote alkyl, alkenyl or halogenoalkyl with at most 4 carbon atoms, X denotes hydrogen or methyl, Y denotes hydrogen or $—CH_2—O—Z$, Z denotes hydrogen or alkyl with 1 to 4 carbon atoms and A denotes alkyl or halogenoalkyl with at most 4 carbon atoms.

These phosphorous compounds are above all suitable as flameproofing, agents, particularly for polyurethane and cellulose containing textiles.

3,801,679

N - [DIMETHYLAMINOMETHYLIDENE]THIOL-(THIONO)-PHOSPHORIC ACID ESTER IMIDES

Hellmut Hoffman, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

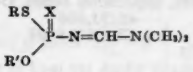
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,736

Claims priority, application Germany, Apr. 16, 1971, P 21 18 469.0

Int. Cl. C01n 9/36; C07f 9/24

U.S. Cl. 260—945 7 Claims

N-[dimethylaminomethylidene]-thiol - (thiono) - phosphoric acid ester imides of the general formula



(I)

in which

X is oxygen or sulfur,

R' is alkyl with 1 to 6 carbon atoms, and

R is alkyl, alkenyl, alkinyl, aralkyl, alkylthioalkyl or alkenylthioalkyl,

which possess insecticidal and acaricidal properties.

3,801,680

O(S),S-DIHYDROCARBYL-N-ACYLPHOSPHORAMIDOTHIO, DITHOATES

Philip S. Magee, Ignatio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 13,846, Feb. 24, 1970, now Patent No. 3,716,600, dated Feb. 13, 1973, which is a continuation-in-part of abandoned application Ser. No. 810,383, Mar. 25, 1969. This application Dec. 21, 1972, Ser. No. 317,315

Int. Cl. C01n 9/36; C07f 9/24

U.S. Cl. 260—950 9 Claims

O,S-dihydrocarbyl - N - acylphosphoroamidothioates and S,S-dihydrocarbyl - N - acylphosphoroamidodithioates have a high degree of insecticidal activity with relatively low mammalian toxicity.

3,801,681

3,5-DI-T-ALKYLPHENYL PHOSPHONATES

Martin Grayson, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,118

Int. Cl. C07f 9/40; C08f 45/58

U.S. Cl. 260—953 5 Claims

Dialkyl 3,5-di-t-alkylphenyl - 4 - hydroxyphenyl phosphonates are prepared by photochemical reaction of a 2,6-di-t-alkyl-4-halophenol with a trialkyl phosphite. The compounds are additives to polyolefins to inhibit deterioration upon exposure to light and weather.

3,801,682

PROCESS FOR PRODUCING DIALKENYL DIALKYL PHOSPHONATES

Ralph S. Ludington, Holley, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 738,850, June 21, 1968, which is a continuation-in-part of application Ser. No. 443,656, Mar. 29, 1965, now Patent No. 3,400,102. This application Apr. 30, 1971, Ser. No. 139,252

Int. Cl. C07f 9/40; C08f 45/58

U.S. Cl. 260—969 4 Claims

Phosphonates are produced by reacting an unsaturated carboxylic ester and a monocarboxylic acid with a phosphorus compound of the formula $(RO)_xP(R')_y$ wherein R and R' contain from 1 to 12 carbon atoms and are independently selected from the group consisting of alkyl, alkylene, alkenyl, aralkyl and aryl, and halogenated derivatives thereof, provided that at least one R is alkyl, alkenyl, aralkyl or alkylene; x is from 1 to 3, y is from 0

to 2 and the sum of x and y is 3. Compounds that can be produced include dialkenyl dialkyl phosphonates such as diallyl dimethyl phosphonosuccinate. The compounds are useful in preparing fire retardant polymer compositions, bituminous compositions and coating compositions.

3,801,683
PROCESS FOR PREPARING TRIALKYOPHOSPHATE

Yutaka Kodama and Tsutomu Kodama, Toyama, Masao Nakabayashi, Nameriwa, and Hiroshi Hirano, Toyama, Japan, assignors to Toyama Chemical Co., Ltd.

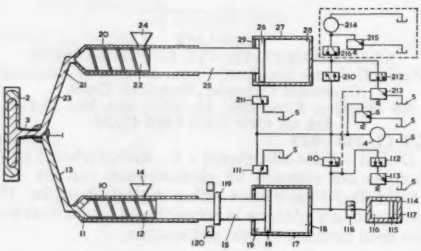
No Drawing. Filed Oct. 19, 1971, Ser. No. 190,668
Claims priority, application Japan, Oct. 20, 1970, 45/91,606
Int. Cl. C07f *9/08*
U.S. Cl. 260—973 **7 Claims**

Trialkyl phosphates which are used as solvents or catalysts are produced by reacting alcohols with phosphorus oxychloride. The alcohols are employed in an amount in excess of the stoichiometric amount. The excess alcohol is distilled from the reaction mixture of trialkyl phosphates and then continuously absorbed in and reacted with phosphorus oxychloride to produce alkylchlorophosphate. Alcohol is then added to the resulting alkylchlorophosphate, to produce a reaction mixture of trialkylphosphate. The alcohol which is produced in said process is recycled to succeeding reaction steps to obtain the desired trialkylphosphate on an industrial scale.

3,801,684
INJECTION MOULDING

Klaus Schrewe, Leverkusen, Ullrich Knipp, Schildgen, and Akos Ravasz, Cologne, Germany, assignors to Imperial Chemical Industries Limited, Millbank, London, England

Filed Jan. 27, 1972, Ser. No. 221,251
Int. Cl. B29f *1/12*
U.S. Cl. 264—40 **19 Claims**



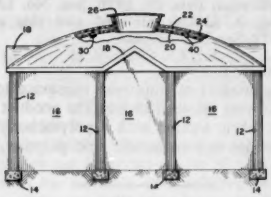
Sandwich moulding process wherein skin and core materials are sequentially injected into a mould cavity from separate injection barrels through a common sprue, skin material being caused to flow up the core feed channel, towards the core injection barrel while skin material is being injected into the mould cavity.

3,801,685
METHOD OF CONSTRUCTING A BUILDING

Robert C. Bell, Jr., 528 Main St., New Canaan, Conn. 06840

Filed Oct. 28, 1971, Ser. No. 193,278
Int. Cl. E04b *7/08, 7/14;* E04d *11/02*
U.S. Cl. 264—45 **14 Claims**

A building having, at least in part, a domed surface is constructed by erecting side walls supported between vertical columns and then providing two structural roof layers spaced from each other with filler material between these layers. The structural layers are made in situ using fluent material which solidifies. The lower layer serves as the mold for the upper layer and means are used to

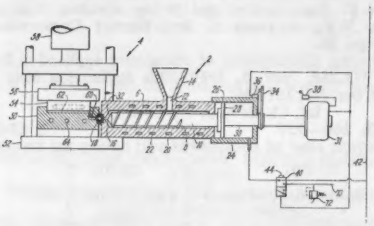


pry the upper layer loose and lift it from the lower layer. The filler material suitably comprises a polymeric plastic compound foamed in situ.

3,801,686
METHOD OF INJECTION MOLDING ARTICLES OF FOAM MATERIAL

William T. Kyritsis, Beverly Farms, and Robert C. Simmonds, Jr., Topsfield, Mass., assignors to USM Corporation, Boston, Mass.

Filed Jan. 24, 1972, Ser. No. 220,208
Int. Cl. B29d *27/00;* B29b *3/00;* B29f *1/08*
U.S. Cl. 264—51 **4 Claims**



Method of injection molding articles in which a mixture of injection molding material and a blowing agent at a temperature below the foaming temperature is brought to foaming temperature directly before the mixture enters the mold and is introduced into the mold to fill the mold cavity during the induction period of the blowing agent. The blowing agent is deactivated in portions of the mixture which contact the walls of the mold and the volume of the mold cavity is increased to allow that portion of the mixture which is not in contact with the mold walls to expand.

3,801,687
HEAT COMPRESSIBLE POLYETHERURETHANE FOAMS

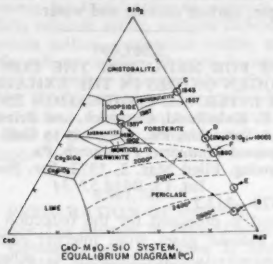
David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company, Summit, Ohio

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,722
Int. Cl. B29c *5/00*
U.S. Cl. 264—54 **9 Claims**

Polyurethane foam produced from the interreaction of an intimate blend of a polyetherpolyol, water, surfactant, catalyst, polyisocyanate and a small amount of a chlorinated material selected from the group consisting of polyvinylchloride and chlorinated paraffin is irreversibly heat

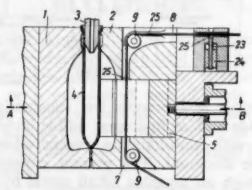
compressible to 100% set after 5 minutes at 390 to 430° F. to any desired density or configuration. Such foam is useful as flat or waffled rug underlay.

3,801,688
PROCESS FOR PRODUCING HIGH DENSITY CERAMIC PRODUCTS
Thomas D. McGee, Ames, Iowa, assignor to Iowa State University Foundation, Inc., Ames, Iowa
Continuation-in-part of abandoned application Ser. No. 882,591, Dec. 5, 1969. This application Dec. 22, 1971, Ser. No. 210,946
Int. Cl. F27b *9/04*
U.S. Cl. 264—65 **10 Claims**



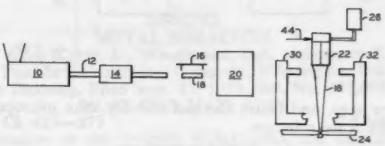
A process for producing high density ceramic products by hot forging of the granular ceramic with a liquid phase present, and subsequently heat treating to convert the liquid phase to a solid phase sufficient to improve the hardness and strength at elevated temperatures.

3,801,689
METHOD FOR APPLYING LABELS OR PLATES TO HOLLOW BODIES OF THERMOPLASTIC SYNTHETIC SUBSTANCE PRODUCED BY THE BLOW MOULDING PROCESS
Erhard Langecker, Hohbuschner Weg 5, Meinerzhagen, Westphalia, Germany
Original application June 1, 1970, Ser. No. 42,064, now Patent No. 3,684,418, dated Aug. 15, 1972. Divided and this application Apr. 13, 1972, Ser. No. 243,887
Claims priority, application Germany, June 12, 1969, P 19 29 983.3
Int. Cl. B29c *17/07, 27/22;* B32b *1/10*
U.S. Cl. 264—94 **6 Claims**



A wrap-round label is applied to a blow-moulded article by means of a plunger extending through the mould wall. The front face of the plunger is concave, being shaped to fit the article, and the label is initially mounted on the plunger so as to be stretched or taut across the front face. When blow-moulding commences, initially the plunger is in an outwardly retracted position. As blow moulding proceeds, the plunger is advanced so as to wrap the label around the article.

3,801,690
CLOSING MOLD HALVES ON STRETCHED PORTION OF INDIVIDUAL PARISON PREFORM AT ORIENTATION TEMPERATURE
Dixie E. Gilbert, Orangeburg, N.Y., assignor to Phillips Petroleum Company
Continuation of abandoned application Ser. No. 880,329, Nov. 26, 1969. This application Feb. 16, 1972, Ser. No. 226,941
Int. Cl. B89c *17/07*
U.S. Cl. 264—99 **7 Claims**



In a process for blow molding biaxially oriented hollow articles from tubular parisons, said parison is stretched axially and thereafter mold halves are closed on said thus stretched parisons; a portion of said thus stretched parison adjacent one end can be expanded out into conformity with a neck-forming zone; the other end can be sealed and severed by said mold halves.

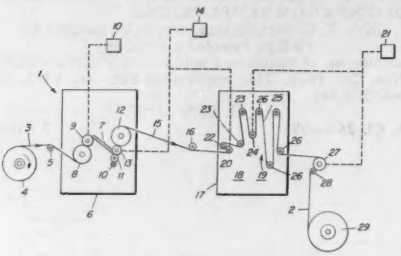
3,801,691
WET-SPINNING PROCESS FOR TOUGH, RIBBON-SHAPED, ACRYLONITRILE POLYMER FIBERS
Edmund Brigmanis, 91 Strawberry Hill Ave., Stamford, Conn. 06902, and Arutun Maranci, 326 Ocean Ave., Stratford, Conn. 06497
No Drawing. Filed Dec. 6, 1971, Ser. No. 205,365
Int. Cl. B29f *3/00*
U.S. Cl. 264—177 F **2 Claims**

A high-speed wet-spinning process for spinning ribbon-shaped fibers of acrylonitrile polymer, said fibers having an aspect ratio between 2.0 and 3.0, a cover factor of 1.2 to 1.3, and improved abrasion resistance, said process comprising the steps of forming a spinning solution of said acrylonitrile polymer in concentrated aqueous sodium thiocyanate solvent, extruding said spinning solution through rectangular orifices directly into an aqueous coagulating bath containing between 22% and 26% sodium thiocyanate, said bath being maintained below 10° C., and each of said rectangular orifices having a short dimension between 20 microns and 200 microns and a long dimension such that the resultant filament spun therefrom has an aspect ratio between 2.0 and 3.0, pulling the resulting freshly-coagulated filaments away from the rectangular orifices at a linear velocity above about 12 meters per minute, washing said filaments substantially free of sodium thiocyanate stretching said filament 4 to 15 times at a temperature above 65° C., drying said filament, and relaxing said filament at a temperature above 100° C.

3,801,692
PRODUCTION OF NOVEL OPEN-CELLED MICROPOROUS FILM
Daniel Zimmerman, East Brunswick, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,425
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 R **9 Claims**

The novel process for making the open-celled microporous film involves the consecutive steps of cold stretching at a temperature below 0° C., for example −10° C. to −40° C., hot stretching, and heat setting a non-porous, crystalline, elastic film. The resulting open-celled micro-

porous film has a greater number of pores, a more uniform pore concentration or distribution, a larger total



pore area, and better thermal stability than microporous films of the prior art.

3,801,693

METHOD OF COLORING LOW PROFILE REINFORCED UNSATURATED POLYESTERS

John P. Stallings, Mentor, Gerald S. Schrag, Painesville, and John R. Semancik, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,465
Int. Cl. B29c *1/04, 9/00, 19/00*
U.S. Cl. 264—246 **7 Claims**

A colored thermoplastic resin is applied in film form or as powder onto the surface of an uncured formulated low profile polyester sheet and is then bonded thereto with heat, forming a laminate of the cured polyester with continuous, adherent overlayers of the colored thermoplastic resin. A method for coloring polyester surfaces after molding with pigmented thermoplastic resin powder is also described.

3,801,694

STATIC LEACHING PROCESS

Gerald F. Pace and Earl W. Shortridge, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 135,456, Apr. 19, 1971. This application Nov. 15, 1971, Ser. No. 199,027
Int. Cl. B01d *11/00*
U.S. Cl. 423—20 **12 Claims**

The present invention relates to a method for leaching a mineral from an ore containing said mineral wherein an acid lixiviant containing a soluble aluminum salt is introduced under pressure into a vessel containing a bed of ore. A sweep fluid is then introduced into said vessel to sweep the lixiviant containing the dissolved mineral values out of said ore bed. An additional aspect of this invention is a step of drying said ore in an agitated state prior to leaching.

3,801,695

PROCESS FOR THE SEPARATION OF NICKEL AND/OR COBALT FROM MANGANESE

Wilhelm Roever, Helmut Junghanb, and Alfred Roeder, Duisburg, Hans-Werner Kauczor, Leverkusen, and Gunter Kuhne, Cologne, Germany, assignors to Bayer Aktiengesellschaft, and Duisburger Kupferhutte, both of Leverkusen, Germany

No Drawing. Filed Oct. 17, 1972, Ser. No. 298,360
Claims priority, application Germany, Oct. 19, 1971, P 21 51 893.4
Int. Cl. C01g *45/00, 51/00, 53/00*
U.S. Cl. 423—49 **5 Claims**

Passing an aqueous solution of salts of the title metals at a pH of 1.5 to 3.5 and at a temperature of 30 to 80° C. through at least two serially connected resin columns containing a complex-forming ion exchange resin having aminocarboxylic acid and/or iminodicarboxylic acid groups as the active exchange groups until nickel and/or cobalt ions appear in the effluent of the last resin column and then disconnecting and eluting nickel and/or cobalt from the first resin column.

3,801,696

APPARATUS FOR REMOVING NITROGEN OXIDES FROM ENGINE EXHAUST

Jay Anthony Mark, 6 Balboa Coves, Newport Beach, Calif. 92660

Filed Nov. 18, 1971, Ser. No. 200,161
Int. Cl. C01b *53/34*
U.S. Cl. 423—212 **2 Claims**

A method and apparatus for removing nitrogen oxides from combustion engine exhaust wherein the exhaust is conducted through a urea containing liquid which results in the chemical transformation of the oxides of nitrogen into nitrogen, carbon dioxide and water.

3,801,697

PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

Thaddeus P. Kobylinski, Cheswick, and Brian W. Taylor, Richland Township, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,425
Int. Cl. B01d *53/34*
U.S. Cl. 423—213.7 **20 Claims**

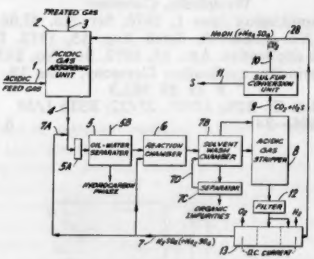
A method is proposed for the reduction of nitrogen oxides in exhaust gases from internal combustion engines to selectively form nitrogen as substantially the only nitrogen-containing product. The method comprises contacting an exhaust gas from an internal combustion engine at an elevated temperature in a reducing atmosphere with rhodium and ruthenium.

3,801,698

REMOVAL OF ACIDIC GASES FROM HYDROCARBON STREAMS

Edgar G. Lowrance, Dedham, and John P. Eames, Framingham, Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Jan. 18, 1971, Ser. No. 107,056
Int. Cl. C01b *17/56*
U.S. Cl. 423—234 **22 Claims**



An apparatus and process for substantially reducing carbon dioxide and/or hydrogen sulfide levels in a hydrocarbon gas with simultaneous regeneration of reagent materials are disclosed. The process consists of passing the gas through an aqueous alkali metal hydroxide solution, removing any separated hydrocarbons which consist of heavy hydrocarbons, polymerized hydrocarbons and potentially polymerizable hydrocarbons which result upon settling, reacting the aqueous effluent liquid with an acidic reagent, solvent washing the effluent, stripping the acidic gases therefrom and subjecting the resulting aqueous sodium sulfate solution to an electrolytic process. The apparatus used to carry out the process comprises an acidic gas absorbing unit, means for removing the hydrocarbon layer which results upon settling, means for reacting the resulting effluent aqueous liquid, means

for solvent washing the effluent, means for stripping the acidic gases and an electrolytic cell to convert soluble alkali metal salts into the corresponding alkali metal hydroxide and acidic reagents.

3,801,699

REDUCING SCALE DEPOSITION FROM ALKALINE EARTH METAL SULFATE AND FULFITE SLURRIES

John L. Arnold, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 93,883, Nov. 30, 1970. This application Mar. 17, 1972, Ser. No. 235,801

Int. Cl. C01b *17/00*

U.S. Cl. 423—244 **6 Claims**

In the process for transferring an aqueous slurry of calcium sulfate, calcium sulfite, calcium carbonate, dolomite, magnesium sulfate, magnesium sulfite, magnesium carbonate, fly ash or mixture thereof in contact with surface areas to a settling chamber where the solids are separated from the liquid, polyacrylamide is added to the slurry to prevent scale formation on the surfaces. Subsequent separation of the solids from the slurry is not adversely affected.

3,801,700

PREPARATION OF $^{238}Pu^{16}O_2$

Robert L. Nance, Los Alamos, N. Mex., Joseph A. Leary, Postfach, Germany, and Lawrence J. Mullins, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,977

Int. Cl. C01g *56/00*

U.S. Cl. 423—251 **2 Claims**

A method of preparing $^{238}Pu^{16}O_2$ in which massive electrorefined ^{238}Pu is powdered by successive hydride-dehydride cycles. The powdered and largely but not completely dehydrided ^{238}Pu is then reacted with gaseous $H_2{}^{16}O$ in a helium stream at a temperature of 580–610° C. The oxide thus produced is then heated to 700° C. under vacuum for a short time to remove volatile impurities.

3,801,701

PROCESS FOR THE REDUCTION OF URANYL SALTS

Robert George Robins, Chatswood, and Barry William Edenborough, Kingsford, New South Wales, Australia, assignors to Unisearch Limited, Kensington, New South Wales, Australia

No Drawing. Filed May 18, 1970, Ser. No. 38,579

Claims priority, application Australia, May 20, 1969, 55,280/69

Int. Cl. C01g *43/02*

U.S. Cl. 423—261 **8 Claims**

An improved process for the production of uranium dioxide by the reduction of an acid solution of a uranyl salt, preferably the sulphate, nitrate, chloride, acetate or perchlorate, or a mixture of any of these salts, with a carbohydrate, such as sucrose, D-glucose, D-fructose, starch or a saccharide, at a temperature of between 60° C. and 300° C. until the uranyl solution is reduced to uranium dioxide.

3,801,702

SEMICONDUCTING EUROPIUM- AND/OR YTTERBIUM-CONTAINING SULFIDES AND SELENIDES OF PSEUDO-ORTHORHOMBIC CRYSTAL STRUCTURE

Paul C. Donohue, Montclair, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,181

Int. Cl. C09k *1/12, 1/16*

U.S. Cl. 423—263 **13 Claims**

Disclosed herein are europium- and/or ytterbium-containing tetrachalcogenides of pseudo-orthorhombic crystal structure, and a process therefor. Said tetrachalcogenides, useful as semiconductors and as luminophors, have the formula

$$MQ_2X_4$$

wherein:

M is selected from at least one of Eu and Yb,
Q is selected from at least one of Al, Ga and In,
X is selected from at least one of S and Se, and with the proviso that when M consists of or includes Yb, then Q is selected from at least one of Al and Ga.

3,801,703

METAL BORACITES

Tom Allen Bither, Jr., Woodbrook, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,605

Int. Cl. C01b *21/20, 35/00*

U.S. Cl. 423—277 **7 Claims**

Boracites of the formula $M_3B_7O_{13}NO_3$ are described wherein M is at least one of Co, Ni, Cu, Zn or Cd. The compounds can be prepared by heating boron trioxide, metal borates or other sources of boron with MNO_3 at 65 kilobars and a temperature of 600 to 1000° C. The compounds are crystalline having orthorhombic symmetry, space group $Pca2_1$. The compositions are useful as the working elements in piezoelectric devices and are also ferroelectric.

3,801,704

ALUMINUM PHOSPHATE AND A PRODUCING METHOD THEREFOR

Masamitsu Kobayashi, Hyogo-ken, and Mitsuano Takahashi, Osaka, Japan, assignors to Teikoku Kako Company Limited, Osaka, Japan

Filed Mar. 9, 1972, Ser. No. 233,253

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—309 **12 Claims**

The invention is to offer a novel aluminum phosphate of high acidity being water-insoluble and nonvolatile, which is obtained by heating and agitating the mixture of aluminum or Al-containing material, and P_2O_5-containing material to effect formation of opaque semisolid substance, and then dehydrating this substance to provide a crystallization thereof. The product is useful for utilization to catalysts, heat resistant materials, antirusting agent or others.

3,801,705

PREPARATION OF SILICA GELS

Jerome H. Krekeler, Cincinnati, Ohio, William Kirch, Clinton, Iowa, and Henri A. Aboutboul, Brussels, Belgium, assignors to National Petro Chemicals Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 766,693, Oct. 11, 1968, now Patent No. 3,652,216. This application Oct. 26, 1971, Ser. No. 192,134

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C01b *33/12, 33/16*

U.S. Cl. 423—338 **28 Claims**

Silica xerogels having a narrow pore diameter distribution in the range of 300–600 A., and surface areas in the range of from 200–500 $m.^2/g.$, pore volumes in the range of 2.0–3.5 $cm.^3/g.$ and the process of preparing such xerogels comprising critically controlled steps of precipitation of the silica gel, aging the precipitated silica hydrogel slurry, controlling the level of alkaline material in the precipitated hydrogel slurry by washing the aged product and drying the gel by azeotropic distillation with a solvent which is non-miscible with water. Also, a process for preparing such xerogels wherein the non-water miscible solvent is continuously recycled so that a minimum amount of solvent need be used.

3,801,706
PREPARATION OF SODIUM PERCARBONATE
Milton Sack, Syracuse, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 21, 1971, Ser. No. 136,180
Int. Cl. C01d *7/00*
U.S. Cl. 423—421 10 Claims

A process for the manufacture of sodium percarbonate comprising the steps of mixing an aqueous solution of sodium carbonate with approximately the stoichiometric quantity of an aqueous solution of hydrogen peroxide, said solutions being of a sufficiently high concentration to insure the precipitation of at least part of the thereby produced sodium percarbonate; vigorously agitating the aqueous sodium percarbonate slurry so produced, and feeding said slurry to a spray dryer in an essentially homogeneous state, thereby producing a dry, free-flowing sodium percarbonate product.

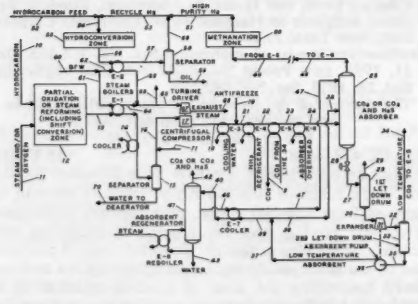
3,801,707
THERMAL STABILITY OF ALUMINUM HYDRIDE THROUGH USE OF STABILIZERS
Alan E. Ardis, North Haven, and Frank S. Natoli, Hamden, Conn., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Apr. 9, 1969, Ser. No. 815,527
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 10 Claims

Free radical acceptor stabilizers such as 2-mercaptobenzothiazole and phenothiazine when introduced into an aluminum hydride synthetic process have been found effective in improving the thermal stability of the final aluminum hydride product.

ERRATUM

For Class 423—645 see:
Patent No. 3,801,657

3,801,708
HYDROGEN MANUFACTURE USING CENTRIFUGAL COMPRESSORS
Calvin S. Smith and William J. McLeod, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Original application May 17, 1968, Ser. No. 736,520, now Patent No. 3,618,331. Divided and this application June 26, 1970, Ser. No. 59,864
The portion of the term of the patent subsequent to Oct. 6, 1987, has been disclaimed
Int. Cl. C01b *1/16, 1/32, 31/20*
U.S. Cl. 423—650 4 Claims



A process for manufacturing high pressure, high purity hydrogen which comprises:

(a) generating by steam reforming or partial oxidation of hydrocarbons at a pressure below about 450 p.s.i.g. a hydrogen-rich gas containing sufficient CO_2 so that the molecular weight of the hydrogen-rich gas is at least four;

(b) centrifugally compressing the hydrogen-rich gas from the pressure below about 450 p.s.i.g. to a substantially higher pressure above 450 p.s.i.g. to obtain high pressure hydrogen-rich gas;

(c) removing CO_2 from the high pressure hydrogen-rich gas to obtain high purity hydrogen, at least part of the CO_2 being removed by absorbing CO_2 in a physical absorbent.

3,801,709
FRAGRANCE RETENTION BY CHELATING AGENT COATED TALC
Larry Louis Augsburger, Baltimore, Md., and John Ray Marvel, East Brunswick, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,519
Int. Cl. A61k *7/02;* A61e *13/00;* C11b *9/00*
U.S. Cl. 424—69 7 Claims

Compositions comprising finely divided materials having fragrance ingredients, i.e. perfume associated therewith are improved in the ability to retain such fragrances without deteriorating over a period of time by treating said materials with a chelating substance. It is postulated that various components of the finely divided materials that would otherwise react with said perfume and degrade it are inactivated. Both the process of inactivation and the compositions resulting therefrom embody the inventive concept.

3,801,710
METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING HALOALDEHYDE SULFONATES AND PHOSPHONATES
Roger C. Parish, King of Prussia, and John E. Trei, West Chester, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 881,868, Dec. 3, 1969. This application May 31, 1972, Ser. No. 258,254
Int. Cl. A23h *1/18*
U.S. Cl. 424—222 10 Claims

Certain haloaldehyde sulfonates and phosphonates when ingested admixed in the feed of ruminants in doses which have no therapeutic or toxic properties and which do not inhibit overall fermentation of the rumen improve the feed efficiency of the ruminant diet significantly. The chemical compounds are added to the feed as a uniform additive, used as a premix combined with an edible carrier or dispersed in salt blocks for pasture feeding. Preferred and exemplary compounds to be used as active ingredients are sodium 2,2,2-trichloro-1-hydroxyethane sulfonate, dimethyl 2,2,2-trichloro-1-hydroxyethyl phosphonate and their O-lower alkanoyl derivatives.

3,801,711
PHARMACEUTICAL COMPOSITIONS OF QUINOXALINE-DI-N-OXIDES
Florin Seng, Cologne-Buchheim, Kurt Ley, Odenthal-Gloebusch, and Karl Georg Metzger, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Original application Nov. 28, 1969, Ser. No. 880,968, now Patent No. 3,682,906. Divided and this application Sept. 16, 1971, Ser. No. 181,245
Claims priority, application Germany, Dec. 11, 1968, P 18 13 918.9
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 24 Claims

Certain 2-hydroxymethyl-3-carboxylic acid amidoquinoxaline-di-N-oxides(1,4) are provided having antibac-

terial activity against both gram-negative and gram-positive organisms. The compounds are useful also in animal feeds and drinking water and are made by reacting the corresponding lactone with ammonia or an amine in a diluent at 0° to 80° C.

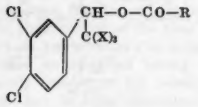
3,801,712

INSECTICIDALLY ACTIVE ACYLATED β,β,β-TRICHLORO-α-[3,4-DICHLOROPHENYL]-ETHANOL

Werner Meiser, Wuppertal-Elberfeld, Wolfgang Behrenz, Cologne, and Karl-Heinz Buchel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 22, 1971, Ser. No. 155,601
Claims priority, application Germany, Mar. 3, 1970, P 21 10 056.1; June 26, 1970, P 20 32 076.7
Int. Cl. A01n *9/24*
U.S. Cl. 424—311 **5 Claims**

Compositions and methods of using certain acylated β,β,β - trihalo - α - [3,4-dichlorophenyl]-ethanols of the general formula



(I)

in which:

X is bromine, chlorine or fluorine, and
R is lower alkyl,

which possess strong insecticidal properties. Most of the acylated substituted ethanols are new compounds.

3,801,713

METHOD OF PRODUCING PROTEIN-CONTAINING LAMELLAR STRUCTURE MEAT SUBSTITUTE

Vladimir Borisovich Tolstoguzov, prospekt Vernadskogo 24a, kv. 95; Alexandr Ivanovich Mzhelsky, 2 Sinichkina ulitsa 8, kv. 3; Vera Alexandrovna Ershova, 48 Kvartal Belyaevo-Bogorodskoe, korpus 23, kv. 234; Evgeny Evgenievich Braudo, Festivalnaya ulitsa 33, kv. 90; and Natalia Vasilievna Mikheeva, ulitsa Raduzhnaya 3, korpus 2, kv. 51, all of Moscow, U.S.S.R.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,352
Claims priority, application U.S.S.R., Apr. 24, 1970, 1427320, 1427326
Int. Cl. A23j *3/00;* **A23l** *1/34*
U.S. Cl. 426—239 **12 Claims**

A lamellar structure meat substitute is prepared by first diffusing polyvalent metal ions through a semi-permeable membrane into a colloidal solution to form a gel followed by freezing and defrosting of the gel to develop lamellar structure therein and impregnating and bonding the lamellar structure elements with an edible binder.

3,801,714

METHOD OF DEHYDRATING NATURALLY CRISP VEGETABLES AND DEHYDRATED VEGETABLE PRODUCTS

John W. Shipman, Hudson, and Abdul R. Rahman, Natick, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,630
Int. Cl. A23b *7/14, 7/16*
U.S. Cl. 426—310 **4 Claims**

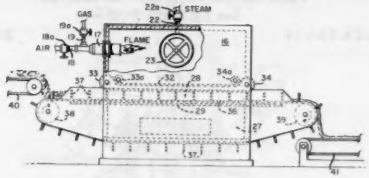
Method of dehydrating a naturally crisp vegetable with retention of crispness after being rehydrated, comprising equilibrating the fresh vegetable with an aqueous solution of glycerol followed by dehydration of the glycerol solution-containing vegetable to a low moisture content, and the dehydrated vegetable product produced by the method.

3,801,715

DRY BLANCHING PROCESS

Traver J. Smith, San Jose, Calif., assignor to Genevieve I. Hanscom (formerly Genevieve I. Magnuson, Santa Cruz, Calif., Genevieve I. Hanscom, Robert Magnuson, and Lois J. Thomson (formerly Lois J. Duggan), as trustees of the estate of Roy M. Magnuson, fractional part interest to each

Filed Aug. 25, 1971, Ser. No. 174,903
Int. Cl. A23l *3/16;* **A23b** *7/06*
U.S. Cl. 426—314 **6 Claims**



A continuous dry blanching process as a preliminary to freezing operation with vegetables such as spinach, green peas, carrots, green beans, etc., is provided. The process employs a recirculating substantially oxygen-free gaseous heating medium which is heated to a temperature above 212° F. and which is formed from the products of combustion and includes steam as a moisture medium. In the treating zone the medium provides a fluidized bed of the vegetable being blanched. The process and apparatus provides for a substantial saving in time in the blanching operation, it saves more of the product and its content as far as minerals, vitamins and nutrient constituents are concerned, and it produces no residue or substantially no residue which has to be passed into a stream or into the sewer system.

3,801,716

COMPRESSION-GRANULATION OF ROASTED COFFEE

James P. Mahlmann, Wayne, N.J., and Edward L. Scarsella, Bedford Hills, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 878,230, Nov. 19, 1969. This application Aug. 18, 1972, Ser. No. 281,678
Int. Cl. A23f *1/02*
U.S. Cl. 426—466 **16 Claims**

Roasted coffee beans are selectively subjected to either a one or two stage comminution process, a higher grade coffee fraction being comminuted via a single grinding operation and a lower grade coffee fraction being comminuted first by a compression operation and then by a second subdivision (e.g. grinding) operation. The two comminuted fractions may then be combined to produce a roasted and ground coffee product having increased extractability and modified flavor and/or aroma.

3,801,717

TREATMENT OF FRUIT JUICES

Carl Franklin Huffman, Maitland, Fla., assignor to The Coca-Cola Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 33,888, May 1, 1970. This application June 23, 1972, Ser. No. 266,970
Int. Cl. A23l *3/00, 1/36*
U.S. Cl. 426—270 **11 Claims**

A process is provided for treating beverages and liquid foods with an ion exchange resin before heating to retard the formation of unnatural flavors, aromas or color.

ELECTRICAL

3,801,718

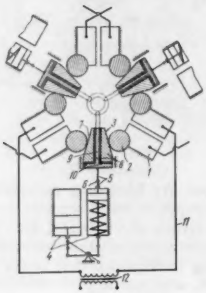
DEVICE FOR FIXING A PLURALITY OF ELECTRODES AND FOR SUPPLY CURRENT THERETO

Vitaly Mikhailovich Baglai, ulitsa Semashko d. 10, kv. 54/3; Lev Andreevich Shuruev, ulitsa Gagarina d. 10/2, kv. 7; Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, d. 2, kv. 8; Yury Fedorovich Alferov, Bulvar Lepse, d. 29, kv. 64; Igor Valerianovich Pentegov, Zadorozhny pereulok, d. 6, kv. 14, and Viktor Andreevich Popov, ulitsa Andreevskaya, d. 11, kv. 2, all of Kiev, U.S.S.R.

Filed Nov. 15, 1972, Ser. No. 306,822

Int. Cl. H05b *7/10*

U.S. Cl. 13—14 **2 Claims**



A device for fixing a plurality of electrodes and for supplying current thereto, wherein the electrodes by means of a pressing mechanism are pressed to stationary current supply contacts. The pressing mechanism has a pressing member and a power member kinematically associated therewith. The pressing member adapted for pressing at least two electrodes is made as a wedge with its inclined surfaces facing the corresponding electrodes.

3,801,719

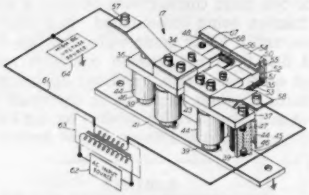
EMITTER BLOCK ASSEMBLY

Richard A. Pudliner, Whitehall, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,691

Int. Cl. H05b *7/00*

U.S. Cl. 13—31 **7 Claims**



An emitter block assembly of an electron beam furnace includes a base maintained at a ground potential and a pair of spaced cathode blocks maintained at a high voltage of negative polarity with respect to the ground potential. A filament is electrically connected between the blocks. An alternating voltage of adjustable magnitude applied between the blocks controls a current through the filament. This current determines a rate at which electrons form an electron beam for the furnace. Ions impinging on surfaces of the blocks and of parts adjacent thereto tend to form conductive films thereon. To prevent such films from shorting the blocks to each other, each of the blocks mounted separately to high voltage insulators extending from the base in areas removed from the main path of the ions. Additionally, the insulators are shielded by spaced metal jackets to prevent a conducting film from forming on the insulators.

3,801,720

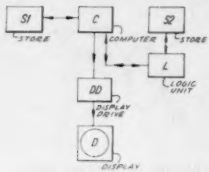
DIGITAL DISPLAY GENERATORS

Harold Frank Rymer, Reading, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed Oct. 29, 1971, Ser. No. 193,821

Int. Cl. G09b *9/00*

U.S. Cl. 35—10.4 **13 Claims**



A digital display generator for producing a simulated coastline display for a radial-scan radar comprises two stores, a computer and a logic unit. One of the stores contains the cartesian co-ordinates of a plurality of spaced points along the simulated coastline, whilst the other store contains the individual elements forming the display between the spaced points. The computer operates to transform the co-ordinates of each spaced point from a fixed datum to a variable datum, whilst the logic unit determines, for each stroke of the radial scan, the point of intersection between the scan stroke and the coastline element nearest to the variable datum.

3,801,721

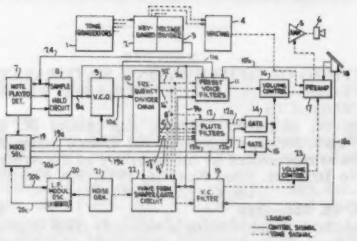
MONOPHONIC ELECTRONIC MUSIC SYSTEM WITH APPARATUS FOR SPECIAL EFFECT TONE SIMULATION

David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 213,939, Dec. 30, 1971. This application June 16, 1972, Ser. No. 263,649

Int. Cl. G10h *1/02, 5/10*

U.S. Cl. 84—1.19 **24 Claims**



A monophonic system includes means for voicing only tones derived in response to depression of a key associated

with the highest pitched note when several keys are struck at approximately the same time, regardless of the order in which the keys are struck. If several keys are released at approximately the same time, only the tones derived in response to the highest remaining activated key are voiced, regardless of the release sequence. In response to the system being played legatissimo, voiced tones gradually shift in frequency, i.e., portamento is achieved. In response to the system being played staccatissimo, voiced tones shift in frequency in discrete steps. For unusual or special effect tone simulation, square wave tone signals derived from a frequency divider chain responsive to a voltage controlled oscillator, controlled primarily by the nomenclature of the highest pitch struck key, may be converted into a sawtooth waveform, a pulse waveform having a pulse width controlled by the highest pitch struck key, or can be left unaltered. Clicks and noise can be derived in response to key activations. The sawtooth, pulse, square wave, clicks and noise are fed through a filter selectively having band pass, low pass and high pass transfer characteristics that can be controlled with regard to resonant frequency and selectivity (Q) to provide additional unusual effects. A first group of tone signals derived from the frequency divider is processed to simulate flutes while a second group is processed to simulate brasses. In flute simulation, filtering of harmonics and passage to an output of the fundamental of the tone associated with the highest pitch struck key is assured by including in cascade a low pass filter and an amplifier having a variable gain characteristic directly related to the nomenclature of the highest pitch struck key. In brass simulation, an attack envelope having plural slopes is provided. Brass brightness is controlled by providing a variable wave shaper that responds to pedal control or is a transient function during the attack of the voice. Flatting during the attack of a brass tone is simulated by transiently reducing the voltage controlled oscillator frequency when a new highest pitch key is struck by an amount indicative of the nomenclature of the struck key. Attack rates of the flutes and unusual tones can be controlled to a plurality of values; if the system is in a percussive mode the attack rate is relatively fast. Roll-off rate of certain flute tones is fixed, while other flute tones and the unusual tones can be provided with a fixed roll-off or sustain effect. The voltage controlled oscillator frequency is modulated by a vibrato through frequency is modulated by a oscillator, the frequency of which can be fixed or controlled in a random manner in response to a noise source to simulate brass vibrato effects.

3,801,722

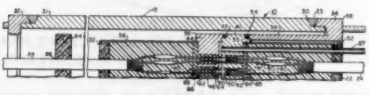
ELECTRICAL PENETRATION ASSEMBLY

Renzo L. Korner, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,924

Int. Cl. G21c *13/02*; **H01b** *17/26*

U.S. Cl. 174—11 R **5 Claims**



An electrical penetration assembly for passing electrical conductors through the wall of a pressure containment vessel. The electrical penetration assembly is comprised of at least two header members having passages through which the electrical conductors pass and are sealed. Preformed electrical insulator support members having openings for conductors are provided within the passages provided in the header members and silicone elastomer potting sealant compound is introduced into the passages to seal the conductors within the openings in said support members and within the passages in said headers.

3,801,723

STRUCTURE OF THE TERMINAL PORTION OF A CABLE

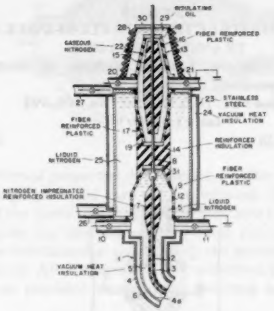
Isao Kubo, Tokyo, and Nobuo Shiseki, Ichikawa, both of Japan, assignors to The Fujikura Cable Works, Limited, Tokyo, Japan

Filed Jan. 30, 1973, Ser. No. 327,949

Claims priority, application Japan, Feb. 2, 1972, 47-12035; May 25, 1972, 47-52060

Int. Cl. H01b *7/34*; **H02g** *15/22*

U.S. Cl. 174—15 BH **4 Claims**



A conductor portion of the terminal portion of a cable is encased in a terminal box having an inlet and outlet provided for accommodating the circulation through the terminal box of a liquid nitrogen coolant. The conductor portion is connected to a conductor leading wire which extends through a bushing up to a normal temperature area. The terminal box and part of the bushing are housed within a tank and the tank has an inlet and outlet provided for accommodating the circulation through the tank of a liquid coolant. The bushing has an inlet and outlet provided for accommodating circulation through the bushing of liquid nitrogen coolant. With the structure so arranged the conductor of the cable is led out up to a normal temperature area with a temperature gradient formed along the conductor leading wire.

3,801,724

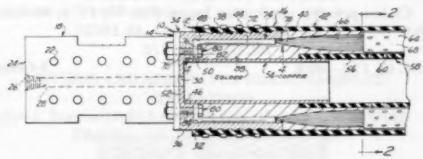
SAFETY-ANCHORED MULTI-CONDUCTOR WATER-COOLED ELECTRIC ARC FURNACE CABLE

Daniel J. Goodman, 23236 Westbury Dr., Saint Clair Shores, Mich.

Filed Sept. 15, 1972, Ser. No. 289,260. The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 C **6 Claims**



The ends of the individual conductor cable ropes of this multi-conductor water-cooled electric arc furnace cable are secured within the cup or pocket of the terminal by embedding them in solder. In order to prevent the individual conductor cable ropes from dropping out of the terminal pocket

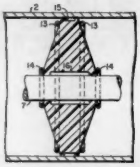
or cup when a clogging or other failure of the water cooling system causes the cable to overheat and consequently melt the solder, two of the individual conductor cables are additionally secured to the bottom wall of the terminal cup or pocket by being encased in an L-shaped tubular conductor clamp. The transverse arm of each such clamp, and the cable rope end therein are drilled for the reception of the shank of a threaded fastener, such as a bolt, the shank of which passes through a bore in the bottom or end wall of the terminal cup and receives a threaded nut on the exterior thereof.

3,801,725

SPACER CONSTRUCTION FOR FLUID-INSULATED TRANSMISSION LINES

Owen Farish, Glasgow, Scotland, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1972, Ser. No. 306,492
Int. Cl. H01b *9/06*
U.S. Cl. 174—28 **10 Claims**



Improved spacer discs with voltage-control rings are provided to centrally locate the inner high-voltage conductor in fluid-insulated transmission lines. The streamer-control rings reduce the probability of initiation of a streamer across the spacer. Rings, in conjunction with corrugations provided on the surface of the insulating spacers, may additionally be provided for voltage control across the spacers. The spacing between a plurality of voltage-control rings, supported on the spacer, may accommodate the voltage-distribution pattern. The rings may be cast into the spacer as cylinders or cemented thereto, as desired.

The rings may be located in somewhat close proximity to both the inner high-voltage conductor, and also to the inner wall of the outer grounded pipe enclosure. Bands of conducting paint, conducting rings of resinous material, such as epoxy, or rings of high-dielectric-constant material may alternatively be employed in place of solid metallic rings.

3,801,726

SNOW-RESISTANT CONDUCTOR

Masayuki Kurihara; Akira Takebayasi; Kazuo Goto; Norio Higuchi, all of Sappora; Ryuso Kimata, Yokohama; Jun Katoh, Tokyo, and Toshikazu Minyu, Nikko, all of Japan, assignors to The Furukawa Electric Co. Ltd, Tokyo, Japan

Filed Feb. 7, 1972, Ser. No. 223,928
Claims priority, application Japan, Feb. 10, 1971, 46-6891; Feb. 17, 1971, 46-11784; Mar. 2, 1971, 46-10821
Int. Cl. H02g *7/16*
U.S. Cl. 174—40 R **5 Claims**

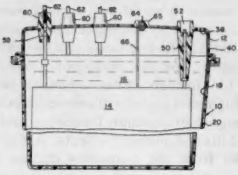
A snow-resistant conductor consists of protruding lines formed on the outer periphery of a conductor, the conductor is formed of a number of stranded round component wires and the protruding lines are formed in such a manner as to cross the component wires in the outermost layer of the conductor.

3,801,727

COMPOSITE ELECTRICAL TRANSFORMER HOUSING

Robert E. Wilkinson, Lafayette; Robert B. Truitt; Richard F. Hunter, both of West Lafayette, all of Ind., and Ronald E. Bennett, Conover, N.C., assignors to Rostone Corporation, Lafayette, Ind., by said Wilkinson and Truitt and General Electric Company, Pittsfield, Mass., by said Hunter and Bennett

Filed Sept. 25, 1972, Ser. No. 292,187
Int. Cl. H01f *27/02*
U.S. Cl. 174—50 **5 Claims**



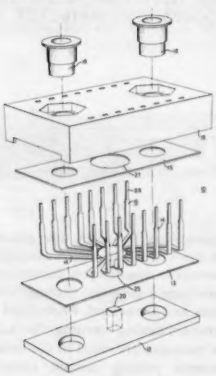
An electrical transformer housing or the like, adapted for direct-buried installation, comprises a tank and a cover sealed thereto, formed of composite walls. The walls have a formed metal liner over substantially their entire area and a molded plastic outer layer covering the entire outer surface of the liner, molded in place against the liner and bonded thereto. Rims on the tank and cover are molded integrally with the plastic outer cover, are sealed to each other outward of the liner by an intervening gasket, and interfit in a trough which receives sealing compound to fix the rims together and provide a secondary seal. Terminal conductor inserts are molded in place in bushings molded integrally with the outer layer of the cover, through openings in the cover liner. The metal liner forms a vapor barrier over as much as 99 percent of the area of the tank and cover to exclude moisture or other fluid which diffuses through the plastic outer layer and the plastic exterior protects the liner and provides corrosion resistance and other advantageous properties.

3,801,728

MICROELECTRONIC PACKAGES

Paul Joseph Gallo, Jr., and Anthony Joseph Schorr, both of Birdsboro, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1972, Ser. No. 299,603
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 S **4 Claims**



Apparatus and method of manufacturing microelectronic packages which have good heat dissipation characteristics are

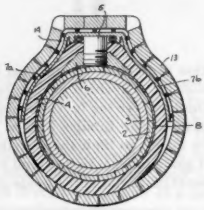
disclosed. A lead frame having a plurality of individual terminals is laminated to a metal base between layers of plastic insulation. A microelectronic circuit chip may now be bonded to an exposed region of the metal base without being subjected to the relatively high temperature involved in conventional package assembly operations. Following the bonding of the chip to the base, connections are made to the individual conductors and a cover is affixed which leaves an exposed surface on the base. The exposed surface acts as a heat sink and is effective to dissipate built-up heat.

3,801,729

ARMORED SUBMARINE ELECTRIC POWER CABLE WITH A PLURALITY OF GROUNDING DEVICES FOR A LAYER THEREOF

Giovanni Portinari; Sesto San Giovanni, and Antonio Brovedan, all of Milan, Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed July 13, 1973, Ser. No. 378,972
Claims priority, application Italy, July 27, 1972, 27475/72
Int. Cl. H01b *7/14, 9/02, 13/22*
U.S. Cl. 174—106 R **5 Claims**



Devices for conductively interconnecting the frettage and the armor of a submarine electric power cable and a power cable including such devices, the devices including a C-shaped clamping element mounted on the frettage and covered by an insulating sheath except for a small hole over a threaded hole in the clamping element and including a threaded element extending through the sheath hole and into the threaded hole of the clamping element. The threaded element may have arms or spokes to assist in screwing it into place and the threaded element is covered by and in contact with the surrounding armor. The clamping elements are applied to the frettage prior to the extrusion of the insulating sheath thereover, holes are successively punched into the sheath over the threaded hole in the clamping element, the threaded elements are successively inserted and the armor is then applied.

3,801,730

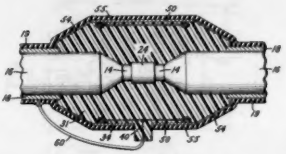
HIGH VOLTAGE CABLE SPLICE WITH PROVISION FOR TESTING THE INSULATION THEREOF AND METHOD OF MAKING SAME

Roy Nakata, Pittsfield, Mass.; Mid Ouyang, Drexel Hill, Pa., and Wendell T. Starr, Los Altos Hills, Calif., assignors to General Electric Company, Philadelphia, Pa.

Filed May 23, 1973, Ser. No. 363,303
Int. Cl. H02g *15/08, 1/14;* **G01r** *31/20*
U.S. Cl. 174—73 R **12 Claims**

A cable splice is constructed in such a way that insulant within the splice can be checked by means of a high potential applied thereto without stressing the previously-existing cable insulation in locations outside the splice.

About suitably prepared ends of two cable sections, there is molded a tubular section of insulant having a tubular metal sleeve imbedded in the insulant near its outer periphery. The insulant has a first external surface portion surrounding the imbedded sleeve and second and third surface portions extending, respectively, between the ends of the first surface portion and the metal sheaths of the cable sections. Tubular metal shielding is applied to the first surface portion in a position to surround the ends of the sleeve. Semiconductive voltage-grading coatings are applied to the second and third surface portions to electrically interconnect the shielding and the sheaths.



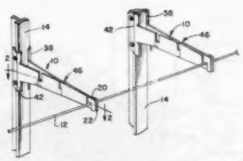
The electrical properties of the splice are then tested by applying a high potential test voltage between the imbedded sleeve and the cable conductor while the cable conductor and cable sheaths are maintained at ground potential and the shielding is maintained at substantially the potential of the imbedded sleeve. After this testing, low resistance electrical connections are provided between the shielding and the metal sheaths.

3,801,731

UNIT FOR ATTACHING ELECTRIC FENCE WIRE TO A SUPPORTING POST

Ralph D. Hansen, Box 117, Rt. 3, Sioux Falls, S. Dak.

Filed July 13, 1973, Ser. No. 379,185
Int. Cl. H01b *17/16;* **A01k** *3/00*
U.S. Cl. 174—163 F **7 Claims**



A pair of complemental flexible and resilient arms have interlocking outer end portions that grip a wire and have mounting inner end portions that are cooperatively clamped onto a supporting post by an interlocking engagement between the portions of the arms intermediate such end portions so that the arms extend laterally in side by side unitary relationship from the post to support the wire in a horizontal position spaced away from the post.

3,801,732

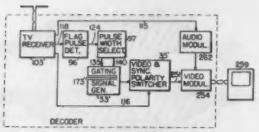
METHOD AND APPARATUS FOR SCRAMBLED TELEVISION

James J. Reeves, 10,622 Artcraft Ave., Garden Grove, Calif.

Filed Nov. 22, 1971, Ser. No. 200,784
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **11 Claims**

A method of rendering television transmissions unintelligible to unauthorized television receivers in which both video and synchronizing information, typically, is rendered alternately useable and unuseable to unauthorized receivers in a secret predetermined manner prior to transmission. An encoded signal derived from a punched card or equivalent and a digital count-down arrangement is added during the blanking

time interval of the television signal, which is then transmitted over the air or through other equivalent facilities. The encoding signal is related to, but to enhance the secrecy does not directly indicate the intervals of unuseable information. At the receiver a decoder unit with a similar punched card or



equivalent and a digital count-down arrangement alters the unuseable intervals of information to make all information useable. An ordinary television receiver may then be used for reproducing the video information, as by remodulating the useable information onto a carrier for an unused television channel.

3,801,733

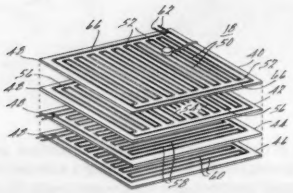
GRID FOR AN AUTOMATIC COORDINATE DETERMINING DEVICE

Knight V. Bailey, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 805,559, March 10, 1969, Pat. No. 3,647,963. This application June 28, 1971, Ser. No. 157,135

Int. Cl. G08c *21/00*

U.S. Cl. 178—19 **7 Claims**



A device for determining position coordinates of points on a surface which includes a conducting grid structure having at least two grid elements to be placed over or under a surface and a cursor structure having a circular conducting loop element to be moved across the surface of the grid structure. An alternating electric signal is supplied to either the cursor conducting loop or to each of the conducting grid elements. This signal induces a signal in each element of the unexcited conducting structure. Position coordinates are determined by apparatus which measures the induced signal or signals and records the signal change produced when the cursor is moved across the grid surface. Several embodiments of measuring devices which determine the distance between arbitrary points on a surface such as a map, graph, or photograph are illustrated. Automatic plotting embodiments are also shown and described in which the plotting motion is determined by comparing signals representing the measured loop position on the grid with a preselected set of command signals.

3,801,734

REACTOR-FUEL ASSEMBLY HOLD DOWN

John M. West, West Hartford, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,309

Int. Cl. G21c *1/00*

U.S. Cl. 176—50 **10 Claims**

Vertical motion of nuclear reactor fuel element bundles is limited by tubular pistons which engage fuel assembly upper end fittings to thereby urge the fuel assemblies in the vertically downward direction. The tubular pistons are provided with mechanical stop means to limit their vertical motion and are disposed within guide tubes which extend between the reactor core fuel alignment plate and upper guide structure.

3,801,735

WIRED BROADCASTING SYSTEMS

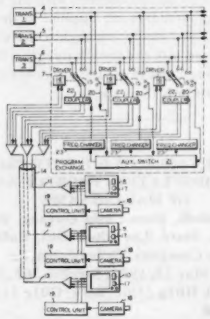
Ralph Parton Gabriel, Chobham, England, assignor to Communications Patents Limited, London, England

Filed Nov. 12, 1971, Ser. No. 198,220

Claims priority, application Great Britain, Nov. 12, 1970, 53940/70

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **1 Claim**

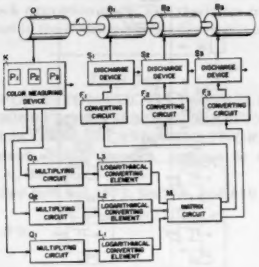


A wired broadcasting system operates with several transmitting program sources and a program exchange which couples a subscriber's twisted pair cable connection to a selected one of the sources. A separate set of control signal conductors enable the subscriber to select either a program source or another subscriber's station.

3,801,736
COLOR REPRODUCTION METHOD IN A HALFTONE DOT

Takeshi Kosaka, and Yoshio Yuasa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed June 21, 1972, Ser. No. 265,020
Claims priority, application Japan, June 23, 1971, 46-45480
Int. Cl. H04n *1/46*
U.S. Cl. 178—5.2 A **1 Claim**



In the method of producing a color reproduction of an original on a substrate in halftone dots of three different color superimposed layers of transparent material having predetermined thicknesses, in which, D_1, D_2 and D_3 respectively denote the predetermined thicknesses of the first, second and third transparent color material layers, and T_{11} denotes the transparency for the first primary color of a unit thickness of the first layer, T_{22} denotes the transparency for the second primary color of a unit thickness of the second layer, and T_{33} denotes the transparency for the third primary color of a unit thickness of the third layer, X_1, X_2 and X_3 respectively denote the occupancy area of the halftone dots of the first primary color in the unit with respect to said original, the occupancy area of the halftone dots of the second primary color and the occupancy of area of the halftone dots of the third primary color, and d_{11}, d_{22} and d_{33} respectively denote the transparency of the first primary color of the halftone dots of the first color with respect to the thickness of each of said areas, the transparency of the second primary color of the halftone dots of the second color and the transparency of the third primary color of the halftone dots of the third color, the area of the halftone dots of every color are determined by the equations,

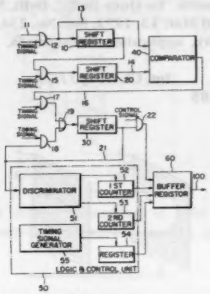
$$(T_{11})^{D_1} = 1 - X_1 + X_1 \cdot (d_{11})$$
$$(T_{22})^{D_2} = 1 - X_2 + X_2 \cdot (d_{22})$$
$$(T_{33})^{D_3} = 1 - X_3 + X_3 \cdot (d_{33}).$$

3,801,737
VIDEO SIGNAL COMPRESSION AND EXPANSION SYSTEM AND DEVICES THEREFOR

Yasuyuki Komura, Kawasaki; Shinichi Hirata; Takashi Fukushima, both of Yokohama, and Mutsuo Ogawa, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,017
Int. Cl. H04n *7/12*
U.S. Cl. 178—6 **17 Claims**

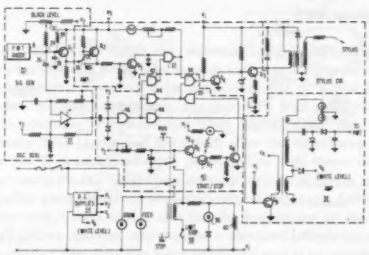
A video signal compression and expansion system characterized by comparing, bit by bit, the binary coded video signals of one scanning line derived by the scanning of a pattern with the reference binary coded video signals of the preceding line in such a manner that when the bit patterns coincide with each other, a first signal is generated but when they do not coincide with each other, a second signal is generated, transmitting no signal so long as said first signals follow in succession but transmitting a line address signal representing a scanning line containing said second signal and a bit position signal representing the bit position of said second signal only when said second signal is derived, reproducing the previously prepared binary coded video signals so long as said line address signal is not received, but reversing the bit in polarity at the bit position designated by said bit position signal when said line address signal is received and detected, and using thus obtained video signals as reference video signals for comparison with the video signals in the next scanning line.



3,801,738
ELECTRONIC STENCIL CUTTER WITH CUTTING SIGNAL PULSE WIDTH INVERSELY PROPORTIONAL TO THE ORIGINAL INTENSITY

McKenny W. Egerton, Jr., Owings Mill, Md., assignor to Instrument Corporation of America, Timonium, Md.

Filed July 5, 1972, Ser. No. 269,203
Int. Cl. G03f *1/00;* **H04n** *1/22*
U.S. Cl. 178—6.6 B **7 Claims**

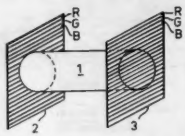


An electronic stencil cutter for reproducing an original on a stencil. A photomultiplier scans the original and produces an output which is directly proportional to the intensity of the pattern on the original. The output of the photomultiplier is applied to a stylus control signal generator which produces a pulse train output having pulse widths inversely proportional to the intensity of the pattern on the original. The output of the stylus control signal generator is applied to a power amplifier which produces a stylus current inversely proportional to the intensity of the pattern on the original. The stylus current is used to generate a spark which produces the image on the stencil. The stylus control signal generator includes a capacitance, an oscillator and a switching device coupled in such a manner that the OFF period of the switching device is inversely proportional to the current through the photomultiplier.

3,801,739
METHOD OF MAKING AN OUTPUT FILTER FOR AN IMAGE INTENSIFIER TUBE WITH COLOR REPRODUCTION AND AN OUTPUT MADE ACCORDING TO THIS METHOD

Ronald Jan Geluk, Nootdorp, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Mar. 13, 1972, Ser. No. 234,183
Claims priority, application Netherlands, Mar. 25, 1971, 7103991
Int. Cl. H01j *31/20*
U.S. Cl. 178—7.85 **5 Claims**

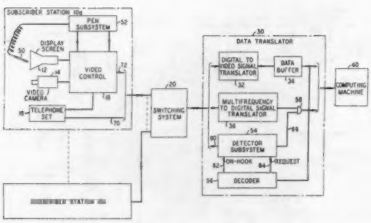


The invention provides a method of making an output filter for an image intensifier tube for colour display, which output filter is a reproduction of the image intensifier tube in order to avoid the influence of the distortion introduced by the tube.

3,801,740
LIGHT PEN CIRCUIT AND REMOTE NOISE-IMMUNE PULSE DETECTOR FOR RASTER SCAN CRT DISPLAY SYSTEM

Clair Alan Buzzard, Eatontown, and Louis Edward Drew, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1971, Ser. No. 208,114
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **9 Claims**

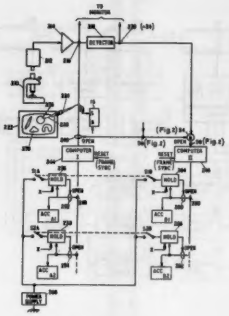


Video telephone stations, which include raster scan cathode-ray tubes, may be connected to each other or to a computing machine by way of a telephone switching system. Each station includes a light pen for providing sensings of the electron beam when video signals are received from the computing machine. The beam sensings are converted to pen pulses, combined with the synchronizing signals of the incoming video signals and the combined signals are transmitted to the computer. In order to distinguish between pen pulses and interference on the signaling link, the light pen aperture is arranged to be sufficient in size to enable the pen to sense an area covering elements of two successive scan lines on the screen, whereby two pen pulses are produced during a field. The computer recognizes a true light probe signal when successive ones of the received pen pulses are separated by an interval of time corresponding to the interval between beam traversals.

3,801,741
FEATURE SELECTION IN IMAGE ANALYSIS

Roger John Herbert Ablett, Potton, England, assignor to Image Analysing Computers Limited, Melbourne, Royston Hertfordshire, England

Filed Apr. 28, 1972, Ser. No. 248,550
Claims priority, application Great Britain, Apr. 30, 1971, 12313/71; Aug. 26, 1971, 40008/71
Int. Cl. G06m *11/04*; H04n *7/18*
U.S. Cl. 178—6.8 **16 Claims**



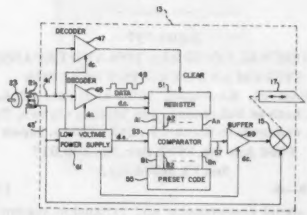
Circuit arrangements are described by which a signal from a so-called light pen is employed to gate the output from a threshold detector set to detect amplitude excursions of a video signal which exceed a reference voltage. In this way the detected signal pulses corresponding to a feature towards which the light pen is pointed, alone, are released and measurements may be made thereon to provide information about the selected feature.

A preferred form of light pen is described in which switch means is provided by which it is possible to select which of a plurality of stores is to be supplied with the information obtained about any feature. In this way operator controlled pattern recognition may be performed.

3,801,742
REMOTE ELECTRONIC LOCK APPARATUS AND METHODS

James P. O'Brien, St. Peters, and John W. Hammond, Ballwin, both of Mo., assignors to Paul H. Schramm, St. Louis, Mo., a part interest

Filed Aug. 25, 1972, Ser. No. 283,811
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 R **15 Claims**



Apparatus for remote electronic lock operation. Electronic locks are associated with respective mobile instrumentalities such as railway cars or semi-trailers, the locks each operating according to a preselected lock code for the instrumentality. Provision is included for establishing a voice frequency com-

munication link having a first terminus at a central lock control facility as to which the instrumentalities are remotely located. A second terminus is near one of the remote instrumentalities. The apparatus includes means for transmitting a lock operation code over the communication link from the first to second terminus and provision for transferring the lock operation code from the second terminus to the last-said instrumentality for operation of its lock means.

As a method of remote electronic lock operation, the identification of one of the instrumentalities is transmitted to the central facility, determination is then made of the corresponding lock operation code, and the latter is transmitted in coded format to the instrumentality to provide access to it.

3,801,743

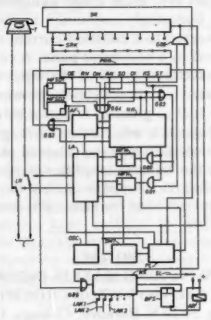
DEVICE FOR AUTOMATICALLY ESTABLISHING CONNECTIONS FROM A SENDING STATION OVER A TELECOMMUNICATIONS NETWORK

Gunnar Westbeck, Solna, Sweden, assignor to Aktiebolaget Gylling & Co., Bromma, Sweden

Filed June 20, 1972, Ser. No. 264,610

Int. Cl. H04m *1/04*

U.S. Cl. 179—5 R **6 Claims**



A device for automatically establishing connections from a sending station to receiving stations over a telecommunications network having automatic exchanges and for transmitting signals to a receiving station over a connection thus established. Particularly, a device of this kind connects to a public telephone network having automatic switching stations, the device being connected to an ordinary subscriber's line which connects the sending station with an automatic switching station.

3,801,744

AUTOMATIC TELEPHONE RECORDER CONTROLLING DEVICE SENSITIVE TO CALLING SUBSCRIBER INTERRUPTION OF SERVICE

Keizo Hayashi, Tokyo, Japan, assignor to Tokyo Rokuon Kogyo Kabushiki Kaisha, Tokyo, Japan

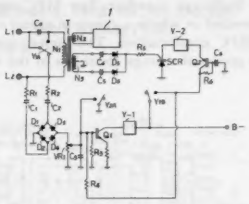
Filed July 24, 1972, Ser. No. 274,264

Claims priority, application Japan, Aug. 30, 1971, 46-65823

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **4 Claims**

An automatic telephone recorder controlling device is provided which includes circuitry for detecting a voltage impulse produced in the telephone lines upon interruption of service by a calling subscriber. The recorder includes a semiconductor element which is rendered conductive upon occurrence of a ringing on the telephone lines and controls the operation of the recorder. The voltage impulse detected upon interruption



of service by a calling subscriber is used to render the semiconductor non-conductive to stop the operation of the recorder.

3,801,745

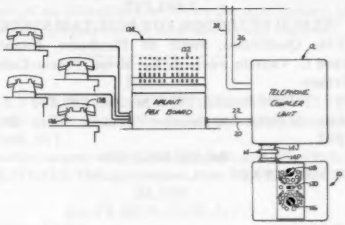
TELEPHONE CALL DURATION TIMER

Walter Zuckerman, 15622 Royal Ridge Rd., Sherman Oaks, Calif.

Continuation-in-part of Ser. No. 865,132, Oct. 9, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,007

Int. Cl. H04m *15/30*

U.S. Cl. 179—7.1 R **8 Claims**



A system is disclosed for automatically supervising the usage of telephone lines. The system includes a customer-provided call timer device which is connectable to a telephone company installed telephone coupler unit and controls the unit to impress a first audio alert signal onto the local telephone lines associated therewith after the lines have been in use for a preselected time period. The call timer device further controls the telephone coupler unit to impress recurring audio alert signals at preselected time intervals following the first audio alert signal and for the remainder of the call. The telephone coupler unit may be a standard telephone company coupler unit that has been modified and is so connected to the lines leading to the local telephone equipment and the lines leading to the central office that the audio alert signals are only discernable on the local telephone equipment.

3,801,746

TELECOMMUNICATION SYSTEM WITH MULTI-FREQUENCY SIGNALLING COMBINATIONS GENERATED FROM A PLURALITY OF SIGNAL SAMPLES STORED FOR EACH COMBINATION

Robert Bertold Buchner, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,347

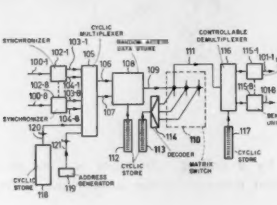
Claims priority, application Netherlands, July 29, 1971, 7110444

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BY **1 Claim**

A telecommunication system with time division multiplex in which a group of receive highways terminates in a common

data store. The local multiplex cycle of the telecommunication system internally provides a number of time channels which is larger than the number of time channels of the group of receive highways together. For MFC signalling a cyclic store is provided in which a group of signal samples is stored for each MFC combination. The signal samples are transferred to a group of storage locations of the data store which



are individually associated with the MFC combinations. For the transmission of an MFC combination in a time channel of a send highway, the PCM words are cyclically transferred from the relevant storage location to the output of the data store in a time channel of the local multiplex cycle, and a communication path is established between this time channel and the channel of the send highway.

3,801,747

SPEECH DETECTOR FOR PCM-TASI SYSTEM

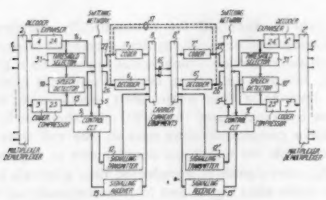
Jean-Yves Queffeulou, route de Ploubezre, Lannion, and Gerard C. Vautrin, route de Kerbiriou, Perros-Guirec, both of France

Filed Oct. 18, 1972, Ser. No. 298,531

Claims priority, application France, Oct. 19, 1071, 71.37562

Int. Cl. H04j *5/00*

U.S. Cl. 179—15 AS **3 Claims**



Speech detector for a communication system transmitting and receiving pulse code modulation PCM signals in time slots on a time division basis, which are connectable and disconnectable on a time assignment speech interpolation basis to and from trunks. The speech detector comprises means for forming with the digits of the PCM signals significant digits equal to the PCM signals digits or to selected combinations of these digits and defining transmission amplitude thresholds and reception amplitude thresholds. The transmission threshold which is selected depends on the reception amplitude threshold. Means are provided for sequentially detecting in each time slot the selected significant digit of the transmitted PCM signals and for deriving therefrom speech slot pulses and no-speech or silent slot pulses. The speech slot pulses are counted during a first predetermined period and the silent slot pulses are counted during a second predetermined period. Control signals for the connection and disconnection of the slots to and from the trunks are derived from the counts.

3,801,748

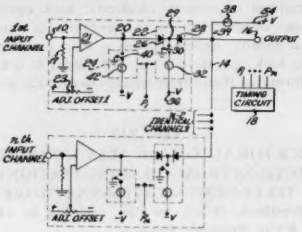
HIGH SPEED SIGNAL MULTIPLEXER

Whitworth W. Cotten, Jr., Melbourne, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 20, 1972, Ser. No. 290,711

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 A **9 Claims**



An analog signal multiplexer uses constant-current devices to multiplex accurately at a high sampling rate. The multiplexer sequentially connects signals from a plurality of input channels to an output bus. Each input signal is passed through an amplifier and then connected through a diode switching circuit to the output bus. Each diode switching circuit comprises two diodes opposingly connected in series, with their junction also connected to a constant-current sink which can be turned on and off by a command pulse. A constant-current source, used in succession by all of the input channels, continuously provides current directly to the common output bus, of an amount one-half as great as is drawn by each constant-current sink. A channel is selected by turning on its current sink, whereupon both diodes of the selected channel conduct and the voltage at the selected amplifier is reproduced at the output bus. Each amplifier supplies current to a constant-current sink substitute load when the channel is not selected.

3,801,749

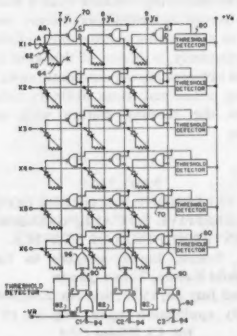
CROSSPOINT SWITCHING MATRIX INCORPORATING SOLID STATE THYRISTOR CROSSPOINTS

Nikola Ljotic Jovic, 5020 N. Bernard, Chicago, Ill.

Filed June 20, 1972, Ser. No. 264,567

Int. Cl. H04q *3/50*

U.S. Cl. 179—18 GF **10 Claims**



Disclosed is a crosspoint matrix applicable for use in telecommunications switching networks. Each crosspoint includes a silicon controlled rectifier or semi-conductor thyristor plus a suitable gating member. A marking signal of

voltage higher than a reference voltage suitably marks a selected conductor of one multiple. A voltage more negative than that of a second reference of the other multiple suitably biases a conductor of the other multiple. Concurrently therewith, a triggering signal is transmitted to the gate of the biased crosspoint completing a path across the matrix. The threshold or reference voltage levels used are considerably separated from the voltage level band used in passing information across a triggered crosspoint, thus resulting in no interference between crosspoints.

3,801,750

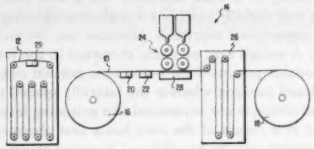
APPARATUS FOR DUPLICATING MAGNETIC TAPES AND APPLYING CUE INDICIA TO THE NON-RECORDING SURFACE OF THE SLAVE TAPE

Alan Beaumont, 359 Wildwood Rd., Stamford, Conn.

Continuation of Ser. No. 93,969, Dec. 1, 1970, abandoned. This application Sept. 14, 1972, Ser. No. 288,947

Int. Cl. G11b *5/86*

U.S. Cl. 360/15 **10 Claims**



The disclosure introduces a method and apparatus for the continuous recording and application of cue indicia to magnetic recording tape.

Printing roller means are constantly rotated at a linear velocity equal to that of a magnetic tape in the process of being recorded from a master tape and in closely spaced relation to the non-recording surface thereof. The printing roller means is momentarily brought into contact with the non-recording magnetic tape surface to imprint cue indicia thereon at those discrete intervals between recorded selections and as a function of the positionment of such intervals adjacent the printing roller means.

3,801,751

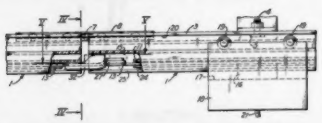
TROLLEY RAILS WITH EXPANSION JOINTS BETWEEN THEM

Donald R. Ross, Jr., Pittsburgh, Pa., assignor to U-S Safety Trolley Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1973, Ser. No. 338,996

Int. Cl. B60m *1/24*

U.S. Cl. 191—44.1 **8 Claims**



A plurality of rigid rails are connected end to end with spaces between them for thermal expansion. The front sides of the rails are provided with parallel slots extending lengthwise thereof for receiving current pick-up members movable lengthwise of the rails in engagement with electrical conductor bars mounted in the slots. These bars project from one end of each rail into the adjoining rail and are connected to the bars therein. An insulating channel member surrounds three sides of each bar where it spans the space between adjoining rails. Each channel member is secured in one rail and is slidably mounted in the adjoining one.

3,801,752

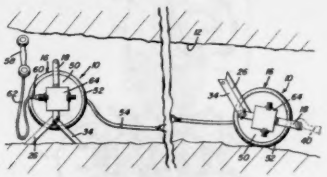
CABLE DISPENSING REEL ASSEMBLY

George G. Gdovichin, Ebensburg, Pa., assignor to Jabco, Inc., Ebensburg, Pa.

Filed Sept. 1, 1972, Ser. No. 285,562

Int. Cl. H02g *11/00*

U.S. Cl. 191—12.2 R **5 Claims**



A cable reel for use in areas having restricted height, such as in low coal mines, and where there may be an accumulation of explosive gases or mixtures which could be ignited by an electrical arc incorporating a supporting leg assembly, handle and reel so that the device may be stationarily supported on the legs or towed or pulled through areas having restricted vertical height with the reel having rubber peripheral tires thereon to prevent an incendiary arc. The reel is provided with a connection with sound powered phones because there is no voltage source required for operation of the phones which eliminates the danger of an incendiary arc from the unit igniting an explosive mixture of gases in the surrounding atmosphere.

3,801,753

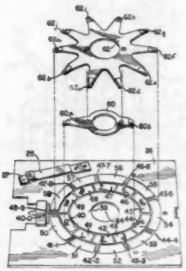
DIAL TYPE WAFER PRINTED CIRCUIT SWITCH

Oleg Szymber, Elk Grove, Ill., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 834,040, Jan. 17, 1969, Pat. No. 3,733,122. This application June 30, 1970, Ser. No. 51,169

Int. Cl. H01h *19/58, 21/78*

U.S. Cl. 200—11 DA **15 Claims**



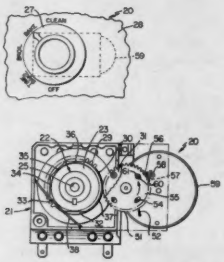
Ten fixed contacts are arranged in an annular pattern; these members define "tens" contacts. Ten fixed "units" contacts are arranged to lie on an imaginary circle concentric with said annular pattern. A movable contact wiper is arranged for one-at-a-time engagement with the "tens" contacts. A member with ten radially extending contact fingers is mounted for rotation and is arranged such that only one of such fingers contacts only one of the "units" contacts at any one time. The contact wiper is mounted for rotation with the contact fingers; during a complete revolution of these two members one hundred switching operations are achieved.

3,801,754

CYCLE TIMER MEANS FOR OVENS

Edgar E. Marquis, Newtown, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 4, 1972, Ser. No. 250,231
Int. Cl. H01h 43/10
U.S. Cl. 200—38 FA 5 Claims



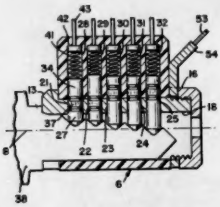
A cycle timer having a frame rotatably carrying a selector that is manually settable to a plurality of positions. Electrical switches are carried by the frame and the selector operates the switches to certain conditions thereof when the selector is respectively set in the various positions thereof. A timer motor is carried by the frame and has drive means so constructed and arranged that when the selector is set in only one position thereof, the selector is operatively interconnected to the drive means of the timer to be driven thereby from the one position thereof to another position thereof for a predetermined time period.

3,801,755

KEY CYLINDER AND ELECTRICAL SWITCH

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed May 3, 1973, Ser. No. 356,707
Int. Cl. H01h 27/00
U.S. Cl. 200—44 7 Claims



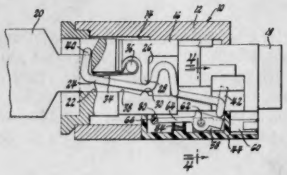
A key cylinder housing has an upper pin therein. A cylinder plug is rotatable in the housing and contains an adjacent pin which may be a master pin or a lower pin arranged to align with the upper pin in one rotated position of the plug in the housing. A key inserted in a keyway in the plug displaces the adjacent pin so that the upper and adjacent pins abut at the rotary surfaces of the plug and the cylinder. The plug can then be key rotated in the cylinder, thus moving the abutting pins out of alignment. The plug and the upper pin are electrically conducting while the housing and the adjacent pin are electrically insulating. An electric circuit is completed through the upper pin and the plug when the plug is rotated in order to control an external mechanism in accordance with the operation of the key.

3,801,756

KEY INDICATING SWITCH

Lynn C. Krom, Saginaw, and Thomas J. Milton, Bay City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 16, 1973, Ser. No. 360,747
Int. Cl. H01h 27/00
U.S. Cl. 200—44 2 Claims



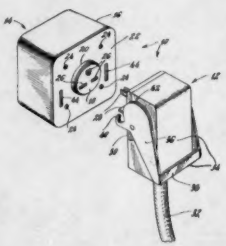
The casing of a lock assembly has a slot which slidably receives and radially restrains a dielectric housing. Laterally spaced upstanding electrical contacts are mounted in the housing. A switch arm pivotally mounted in the housing carries a contact pin movable between a normal open position and a closed position wherein the laterally spaced upstanding electrical contacts are connected. An actuating lever pivotally mounted in a recess of the core has a first abutment portion which extends into the key slot and a second abutment portion which engages the switch arms. When the key is inserted, the actuating lever is pivoted and pivots the switch arm to move the contact pin to closed position.

3,801,757

HEAVY DUTY CONNECTOR

Vincent L. Carissimi, Fairfield, and Frank C. Jaconette, Jr., Trumbull, both of Conn., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed Aug. 2, 1972, Ser. No. 277,467
Int. Cl. H01h 9/20, 33/46
U.S. Cl. 200—50 B 2 Claims

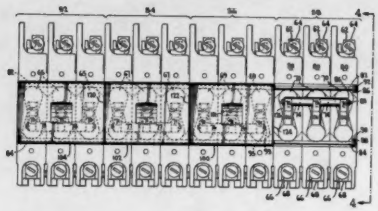


Apparatus for facilitating engagement and disengagement in electrical connectors, particularly where large electrical loads are transmitted therethrough. A pivotal handle is disposed on the connector plug to protect the operator from electrical hazard and to maintain a relatively compact plug profile. Cooperation between the handle and the connector outlet creates a mechanical lock to preclude inadvertent disengagement and also achieves a relatively large mechanical advantage when disengagement is intended. Furthermore, this cooperation establishes an electrical interlock which interrupts power to the connector outlet whenever the mechanical lock ceases to exist.

3,801,758
MULTIPLE SWITCH ASSEMBLY WITH EXTERNAL SLIDE MEMBER ALLOWING ACTUATION OF ONLY ONE SWITCH AT A TIME

J. Richard Shand, Easton, and Lyal N. Merriken, Cambridge, both of Md., assignors to Airpax Electronics, Incorporated, Cambridge, Md.

Filed Mar. 19, 1973, Ser. No. 342,419
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 C **11 Claims**



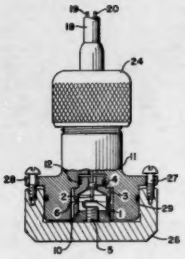
Disclosed is apparatus for selectively allowing the actuation of a predetermined number from a plurality of electrical switching devices in an electrical system. Disclosed is an electrical system that requires, as an example, the selection of one of a plurality of power sources to a load. For overload protection, an electrical switch such as a circuit breaker is connected between each power source and load. The present invention cooperates with the circuit breakers to provide fail-safe protection by permitting one and only one circuit breaker, and thus power source, to be actuated at any one time. The apparatus comprises a slide member whose geometrical configuration allows it to be positioned over a circuit breaker only when the handle of the circuit breaker is in its OFF (unactuated) position. By utilizing a side-to-side configuration of circuit breakers, the slide members may be mounted on a pair of guide rods which extend longitudinally across all the circuit breakers in the system. The guide rods allow the slide members to be selectively positioned over those circuit breakers which are desired to remain in an unactuated position. By providing one less slide member than are provided electrical circuit breakers, only one of said circuit breakers will be left exposed to manual accessibility, thus allowing it to be manually switched to either of its two operating positions. Thus, the slide members of the present invention effectively combine the functions of power source selection and overload protection to make them mutually dependent.

3,801,759
WATER PRESSURE ACTUATED ELECTRIC SWITCH FOR CABLE CUTTER

Ernest E. Temple, Murrysville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 217,116, Jan. 12, 1972, Pat. No. 3,739,673. This application Mar. 7, 1973, Ser. No. 338,995
Int. Cl. H01h *35/24*
U.S. Cl. 200—61.08 **5 Claims**

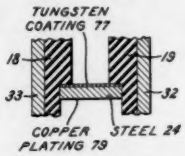
A sealed hollow capsule having inner and outer ends and a side wall contains a pair of electric contacts spaced lengthwise of the capsule, the outer end of which supports one of the contacts. the side wall has an annular groove in it reducing the thickness at that point to a thin band that is compressible to reduce its width when a predetermined pressure is exerted against the outer end of the capsule so that one contact will engage the other contact. The switch is especially suitable for closing an electric circuit connected with electrical firing means in an explosively actuated cable cutter.



3,801,760
ELECTRIC CIRCUIT BREAKER OR THE MAGNETIC BLOWOUT TYPE

Richard M. Korte, West Chester, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Aug. 23, 1972, Ser. No. 283,227
Int. Cl. H01h *33/10*
U.S. Cl. 200—144 C **14 Claims**



An electric circuit breaker of the magnetic blowout type comprises an arc chute having spaced-apart arc runners positioned between the pole pieces of the magnetic blowout means. Each of the arc runners comprises elongated structure of ferromagnetic material and a coating of arc-plasma sprayed tungsten bonded to a surface of said ferromagnetic structure for defining at the exposed side of the coating an arc-running surface along which one arc terminal moves.

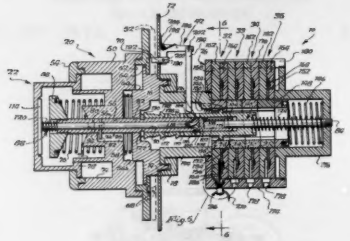
3,801,761
COMBINATION ELECTRICAL SWITCH

Franklin L. Green, Box 77, Machias, N.Y.

Filed July 5, 1973, Ser. No. 376,695
Int. Cl. H01h *27/10*
U.S. Cl. 200—43 **10 Claims**

A combination electrical switch having a plurality of rotary tumblers successively operated by means of an assembly including a combination dial rotatably coupled with a push button, which is mounted for independent reciprocating movements to successively position an operator in driving association with each of the tumblers. Each tumbler serves to drive a

contact element along an annular path into circuit closing engagement with a blade contact, which is selectively positioned



within one of a plurality of radially opening apertures formed in the switch casing to facilitate change of combination.

3,801,762

COMPRESSED GAS CIRCUIT BREAKER

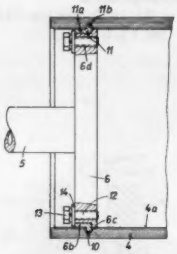
Dieter Noack, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 24, 1972, Ser. No. 283,406

Claims priority, application Germany, Aug. 31, 1971, 2144214

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A **7 Claims**



An electric compressed gas circuit breaker has cooperating stationary and movable contacts and an arc blasting assembly including a stationary blast piston and cooperating therewith, a blast cylinder made of electrically insulating material and having a bottom to which the movable contact is mounted. During circuit breaking, the cylinder's bottom is moved to separate the contacts, the cylinder having an end provided with a nozzle which, due to the cylinder's simultaneous movement relative to the stationary piston, further compresses the gas in which the assembly operates, so that an arc extinguishing blast is ejected through this nozzle. The cylinder is made from electrically insulating material and the bottom removably connects with the cylinder's end remote from its nozzle, by the cylinder's inside having a keyway and its bottom having a key cooperating with this keyway in a removable manner. This keyway is an annular keyway extending circumferentially around the inner surface of the cylinder and this key is a segmented annular key having a circumferential portion inserted in this keyway and a circumferential portion in axial abutting relationship with the bottom in the direction the bottom transmits the moving force to the cylinder during the circuit breaking operation. Means are provided for removably fastening this annular key in the described relationship with the bottom. It follows that the mechanical stress resulting from the transmission of force between the bottom and the cylinder is distributed uniformly throughout the cylinder.

3,801,763

COMPRESSED-GAS CIRCUIT BREAKER

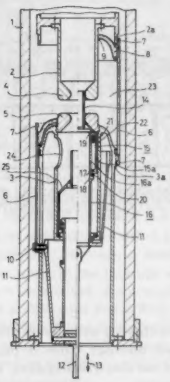
Heiner Marin, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1973, Ser. No. 337,174

Claims priority, application Germany, Mar. 7, 1972, 2211617

Int. Cl. H01h *33/12, 33/82*

U.S. Cl. 200—148 R **14 Claims**



A compressed-gas circuit breaker such as a high-voltage power breaker and the like is disclosed. The circuit breaker has two stationary contact pieces mutually adjacent and defining a gap therebetween. Each of the contact pieces is of hollow configuration for accommodating the passage of the gas. A primary switching member is movable between open and closed positions for electrically bridging the contact pieces in the closed position and an auxiliary switching member is mounted so as to be slideable in the contact pieces for electrically opening and closing the gap. A drive moves the primary switching member between the open and closed positions. A coupling couples the auxiliary switching member to the drive to cause the auxiliary switching member to open the gap after the elapse of a time interval commencing at the separation of the primary switching member from at least one of the contact pieces during the movement of the primary switching member to the open position whereby the primary switching member switches without an arc at the separation and whereby the auxiliary switching member draws an arc when the gap is opened. A gas-blast arrangement actuated by the drive blasts a stream of gas through the arc when the primary switching member is moved to the open position.

3,801,764

ELECTRICAL CONTACT FOR HIGH VOLTAGE POWER CIRCUIT CURRENT

Klaus-Peter Rolff, and Peter Huhse, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 22, 1973, Ser. No. 344,045

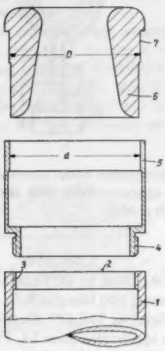
Claims priority, application Germany, Mar. 28, 1972, 2215883

Int. Cl. H01h *33/82*

U.S. Cl. 200—148 R **9 Claims**

In a high voltage, gas-filled power circuit current interruption apparatus, an improved electrical contact comprising a conductive base member, a conductive mounting member disposed in and electrically coupled to the base member, and a

conductive electrode, disposed in the mounting member. The mounting member supports the electrode on the contact and is constructed of an electrically conductive composition which has a coefficient of thermal expansion similar to that of the



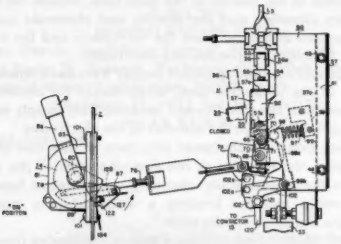
electrode. Thermal stress resulting from heating of the electrode and mounting member by current arcs remains approximately constant over a specified temperature range, and damage caused thereby is prevented.

3,801,765

ISOLATING SWITCH WITH PARTICULAR TOGGLE AND INTERLOCK MEANS THEREFOR

Alfred W. Hodgson, Orchard Park, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 138,143, April 28, 1971, abandoned.
This application Dec. 21, 1972, Ser. No. 317,330
Int. Cl. H01h *3/46, 31/06, 21/40*
U.S. Cl. 200—153 G **9 Claims**



A two-speed operating mechanism is provided for an isolating switch construction, which provides high-speed contact opening for good arc interruption, and low-speed contact movement when the contacts are engaged to minimize operating effort. A novel toggle-mechanism construction is provided, in conjunction with a spring-loaded panel assembly, to effect desired holding of the operating mechanism in both the "ON" and "OFF" positions to prevent thereby contact operation by the application of shock, vibration, or other external forces to the moving contact assemblies.

By a novel travel movement, automatic alignment of the movable isolating contacts with the stationary isolating contacts is automatically achieved.

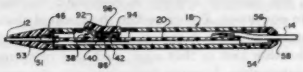
A manually-operable handle mechanism with an improved latch is arranged to be mounted on the front of an operating cabinet enclosing the isolating switch mechanism, so that several cabinets may be mounted side-by-side in flush contiguous arrangement.

3,801,766

SWITCHING MEANS FOR AN ELECTRO-SURGICAL DEVICE INCLUDING PARTICULAR CONTACT MEANS AND PARTICULAR PRINTED-CIRCUIT MOUNTING MEANS

Charles F. Morrison, Jr., Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

Filed Jan. 22, 1973, Ser. No. 325,828
Int. Cl. H01h *23/30, 9/06, 1/18*
U.S. Cl. 200—157 **10 Claims**



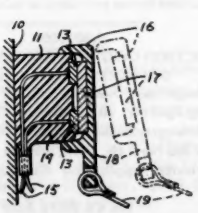
An electrical switching device is disclosed herein and comprises the major components suitable for use as a compact, easily installed switching device and also in an electro-surgical tool which, through the operation of the switching device, is readily adaptable for different intended uses and highly reliable. In one embodiment, the switching device includes a tubular housing having an intermediate longitudinally extending slot formed in its wall and a pair of longitudinally extending diametrically opposed recesses formed on its inner surface. A rectangularly shaped printed circuit board is mounted within the diametrically opposed recesses and includes at least three spaced apart electrical contacts which are positioned so as to be accessable through the slot formed in the housing. An integrally formed, elongated spring contact member is disposed in electrical conducting engagement with the center one of these electrical contacts and includes opposing energy absorbing coils, each of which is adapted to engage reliably a corresponding one of the otherwise free contacts. In this regard, in order to increase further the reliability of the engagement of the contacts, means are provided for securing the printed circuit board against inadvertent longitudinal movement within the housing. An arcuately shaped insert is mounted within the aforedescribed slot and engages portions of the lower surface of the circuit board for further securing said insert in place. In addition, the arcuately shaped insert includes a longitudinally extending slot adapted to receive therein a portion of a longitudinally extending rocker type switch actuator for pivotal movement about an axis generally normal to the axis of alignment of the electrical contacts. The free ends of the aforedescribed spring contact member are positioned within recess guides formed in the actuator and move into engagement with their corresponding contacts in response to selective pivotal movement.

3,801,767

PULL-APART SAFETY SWITCH WITH MAGNETIC MEANS FOR MACHINES

Robert G. Marks, 256 East St., Walpole, Mass.

Filed Dec. 11, 1972, Ser. No. 313,652
Int. Cl. H01h *17/16, 3/14, 36/00*
U.S. Cl. 200—161 **6 Claims**



Several embodiments of pull-apart safety switches are disclosed that are for use in connection with machines from

which the operator may be thrown or which he may leave with the machine remaining in motion. Each switch includes a mount to be secured to the machine and a cover so attached to the mount that it may be pulled therefrom. The mount has leads to be included in the machine circuit that is to be controlled. The cover is provided with a flexible member attachable to the operator and of sufficient length to enable him to make normal movements without pulling the cover from the mount. Each switch also has a conductor and means releasably holding it in a first relationship with the contacts when the cover is attached and a second relationship therewith when the cover is pulled free. In one of the two relationships, the control system is operative to maintain the machine in operation. Except when the control circuit is an ignition system having a magneto, said one relationship is the first relationship and in that case, said one relationship is the second relationship. In most embodiments, the cover is magnetically held in place and in second relationship circuit control, the conductor is within the mount and is held from moving into its circuit-closing position until the cover is pulled free, the conductor then being operatively positioned magnetically, resiliently, or by both such means.

3,801,768

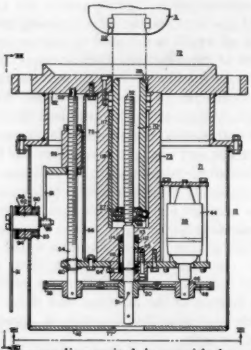
GROUNDING SWITCH

Jeffry R. Meyer, Penn Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 237,079

Int. Cl. H01h *31/24*

U.S. Cl. 200—163 **9 Claims**



An improved grounding switch is provided capable of either an electrical drive, or manual actuation by means of a removable handle. The grounding is accomplished by the screw-driven linear motion of a cylindrical grounding contact, which moves into a stationary finger set attached to the main high-voltage conductor.

The motor-driven grounding switch of the present application is particularly suitable for use with gas-insulated high-voltage transmission systems, and may, for example, be located at junction boxes provided at suitable locations.

3,801,769

INDUCTION COIL FOR ZONE MELTING OF SEMICONDUCTOR RODS

Werner Baumgartner; Norbert Schink; Manfred Schnoeller, and Ludwig Sporrer, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

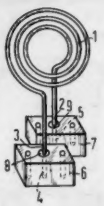
Filed Nov. 10, 1972, Ser. No. 305,379

Claims priority, application Germany, Nov. 24, 1971, 2158274

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **9 Claims**

An induction coil is provided for the floating zone melting of semiconductor rods, the coil being formed of aluminium tubular material having an exterior coating of anodically formed aluminium oxide. The ends of the coil are received in air tight,



conductive relation within bores provided in a pair of terminal blocks, and the space surrounding the coil ends within the bores is filled with solder.

3,801,770

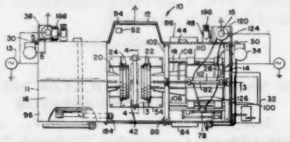
STRUCTURE FOR ELECTRICAL MACHINING

Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich.

Division of Ser. No. 768,697, Oct. 18, 1968, Pat. No. 3,585,341. This application June 14, 1971, Ser. No. 152,944

Int. Cl. B23p *1/08;* **B23q** *1/04, 3/04*

U.S. Cl. 219—69 V **8 Claims**



A machine tool comprising a large elongated fluid tank, dry chamber boxes at each end of the tank supporting spindles having electrodes secured thereto for reciprocal movement toward and away from a workpiece positioned between the dry chambers in the middle of the fluid tank. Means for moving the dry chamber and the spindle and electrode carried thereby toward and away from the workpiece and for simultaneously rotating the spindles and electrodes.

An electrical machining power supply with each spindle at each end of the dielectric tank, servo means for controlling the movement of the spindles and separate fluid supply means for passing fluid through the spindles to the electrodes.

Adjusting bolt and abutment structure at one end of the tank to align the spindles at the opposite ends of the tank. Structures for hydraulically clamping a workpiece between the electrodes and for leveling a work table in position beneath the electrodes in the tank.

The method including moving a pair of electrodes toward a workpiece from the opposite sides thereof, maintaining a predetermined gap between the electrodes and workpiece while simultaneously rotating the electrodes and passing an electric signal between the electrodes and workpiece in the presence of a dielectric or an electrolyte.

3,801,771

METHOD AND APPARATUS FOR MANUFACTURING SPHERICAL METALLIC VESSELS OR HEMISPHERICAL VESSEL HEADS

Akira Ujiie, 7-4, Isukimiyama, hon-machi, 1 chome, Suma-ku, Kobe, Japan

Division of Ser. No. 22,772, March 26, 1970, Pat. No. 3,707,613. This application Oct. 18, 1971, Ser. No. 189,826

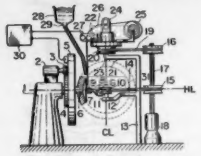
Int. Cl. B23k *9/04, 5/18*

U.S. Cl. 219—76 **4 Claims**

A spherical container or a hemispherical head for a pressure vessel, is formed integrally of deposited weld metal. A first

turntable is rotatable about a substantially horizontal axis which constitutes one diameter of the sphere, and a second turntable is rotatable about a substantially vertical axis which constitutes another diameter of the sphere perpendicular to the first diameter. A small spherical metallic segment constitutes a starting piece, and has a wall thickness equal to that of the vessel to be formed, the segment forming the base of a solid central angle of the sphere.

The segment has a tapered step extending completely around its peripheral edge and having a maximum height equal to the thickness of a layer of weld metal to be deposited and a minimum height equal to zero, thus forming an abrupt step. The segment is mounted on the first turntable for symmetrical rotation about the first diameter of the sphere. The



second turntable supports an electro-slag welding apparatus for revolution about the mentioned vertical axis, and a channel-shape copper block is also mounted for revolution about the vertical axis and is arranged to embrace the periphery of the segment, this block forming a backing bar for the deposited weld metal and flux. The weld metal is progressively deposited along the peripheral edge of the segment in the form of a continuous strip comprised of superposed convolutions whose width is substantially equal to the wall thickness of the vessel to be formed and whose thickness is substantially equal to that of the step. The rate of rotation of the segment is coordinated with the rate of deposition of weld metal, and the rate of revolution of the welding apparatus and of the backing bar is coordinated with the progressive change in diameter of the vessel being formed by the deposited weld metal.

3,801,772

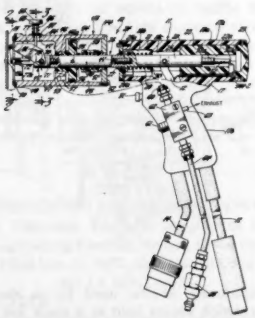
IN-DING REPAIR TOOL

Joseph Curcio, Southfield; Perry P. Hufstetler, Mt. Clemens, and Roger W. Johnson, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1973, Ser. No. 392,070

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **6 Claims**



A repair tool for repairing an indented surface area of a sheet metal panel, such as a vehicle body panel, the repair tool including a stud welding gun with an air actuated piston and cylinder mechanism coupled to the welding gun electrode and to a stud latch mechanism whereby a stud can first be welded to the indented metal and then gripped by the latch mechanism after which actuation of the piston and the cylinder mechanism will provide the necessary force for raising the depressed metal to the normal plane of the surrounding sheet metal of the panel.

3,801,773

APPARATUS FOR HEATING A SAMPLE WITH RADIATION ENERGY CONCENTRATED BY A REFLECTOR ESSENTIALLY COMPOSED OF SPHEROIDAL SURFACE PORTIONS

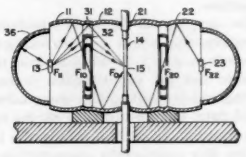
Koichi Matsumi, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1971, Ser. No. 173,458

Claims priority, application Japan, Oct. 23, 1970, 45-93850; Oct. 28, 1970, 45-95371; Nov. 20, 1970, 45-102883

Int. Cl. H05b *1/00*; **F21v** *7/09*; **G02b** *5/10*

U.S. Cl. 219—349 **10 Claims**



A reflector for use in concentrating radiation energy onto a crystalline sample, comprises two pairs of congruent and coaxial prolate spheroidal surface portions, each of which is disposed outwardly of the other. A predetermined number of confocal prolate spheroidal surface portions may be disposed between the adjacent ends of the coaxial spheroid portions of each pair of spheroidal surface portions, and a pair of hemispherical surfaces may be disposed outwardly of the coaxial spheroidal surface portions. The coaxial spheroids of each pair have a common focus, and the adjacent coaxial spheroids of the respective pairs have a common focus. The foci of the confocal spheroids are coincident with those two foci of the coaxial spheroids of each pair which are conjugate to the common focus of the pair, and the centers of the hemispherical surfaces are coincident with the respective axially outer ones of the conjugate foci. Sources of radiation energy are placed at the respective axially outer ones of the conjugate foci. The sample is placed at the common focus of the spheroidal surface portions.

3,801,774

APPARATUS FOR AUTOMATIC PROCESSING OF DATA

Heinz Michaelis, Bielefeld; Gerhard Rethmeier, Dentrup, and Fritz Schmieder, Bielefeld, all of Germany, assignors to Anker-Werke AG, Bielefeld, Germany

Continuation of Ser. No. 629,305, April 7, 1969, abandoned. This application Mar. 1, 1971, Ser. No. 119,897

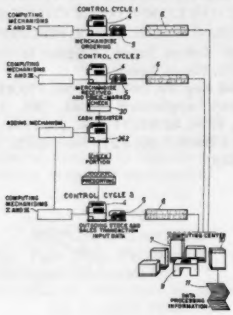
Claims priority, application Germany, Apr. 9, 1966, 52126

Int. Cl. G06k *1/00*, *1/20*

U.S. Cl. 235—61.6 R **4 Claims**

Method of producing an automatically processable data carrier marked with different items of information wherein be-

fore introducing data of a specific business transaction such as merchandise purchasing, merchandise receipt with simultaneous price items marking, and merchandise sale, into a business machine, the data carrier is marked by suitable control and adjusting mechanisms of the business machine for one of the specific business operations with control characteristics comprising heading data relating to the respective business transaction of the information group to be marked thereon, voucher or receipt constants relating to individual subgroups of the information group, and supplemental constants for differentiating the subgroups, and thereafter marking the data



carrier with numerical information relating to the respective business transaction.

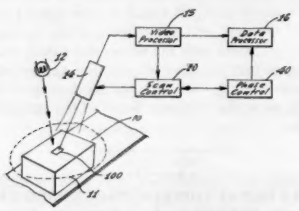
Apparatus for carrying out the method including a business machine having adjusting means for introducing the numerical information coordinated with the heading data, the voucher or receipt constants and the supplemental constants, control keys for releasing and controlling selective machine runs to introduce control data, the control keys having control means acting upon corresponding control means of a tape perforating device of the like additionally characterizing the respective data groups.

3,801,775

METHOD AND APPARATUS FOR IDENTIFYING OBJECTS

Norbert Karl Acker, Buchaschlag, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Aug. 7, 1972, Ser. No. 278,468
Int. Cl. G06k 9/00
U.S. Cl. 235—61.11 E **17 Claims**



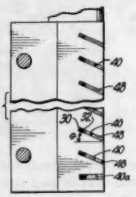
Method and apparatus for identifying objects by means of data information which may appear in random position and orientation and at random times in a particular area. A data field of particular orientation is provided to such an object, the data field including contrasting data markings arranged in at least one track and a unique position identification marking, identifying location of the data field and having preferably asymmetric characteristic to identify angular orientation of the data track; the particular area is scanned and searched therewith for any position identification marking therein; upon detecting such a marking its location as well as the direction of the asymmetry thereof is represented by signals controlling data scan along the data track for reading of the data.

3,801,776

OPTICAL MARK SENSE READER FOR TAB CARDS

Edward J. Goeppinger, Riverside, and David E. Guthrie, Alhambra, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Dec. 26, 1972, Ser. No. 318,321
Int. Cl. G02b 5/16
U.S. Cl. 235—61.11 E **9 Claims**



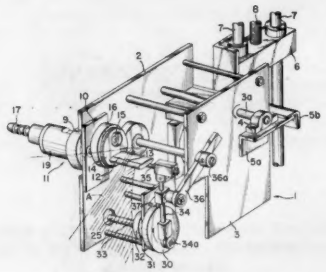
An optical mark sense tab card reader which utilizes an improved fiber optical sensing head having a plurality of elongated sensing areas, the major axis of each of which is aligned at an acute angle to the direction of travel of the tabulation card being read. This allows the card reader to efficiently and reliably read information off of tab cards where the information is presented in either slanted or the standard to vertical mark areas.

3,801,777

SHEET-SEPARATING DEVICE IN SHEET COUNTER USED FOR A SHEET COUNTING MECHANISM

Katsuhiko Onoe, and Mitsuyoshi Tanaka, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Hyogo-ken, Japan

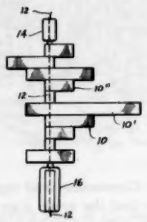
Filed Feb. 21, 1973, Ser. No. 334,484
Claims priority, application Japan, Feb. 22, 1972, 47-17734
Int. Cl. B611 1/16; G06m 7/00
U.S. Cl. 235—98 R **3 Claims**



A sheet separating device used for a sheet counting mechanism in which sheets held in a stack are successively parted into another stack by a hollow suction plate which has a port and oscillates in a prescribed manner adjacent one edge of the stack of sheets, there is provided a sheet separating rod in side-by-side relationship with the suction plate. In relation

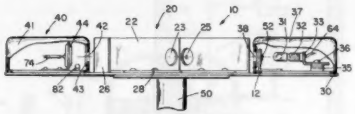
with the oscillatory motion of the suction plate, the sheet separating rod is revolved around the same along a substantially oval path to avoid damaging each sheet being thus separated.

3,801,778
DIET COMPUTER
Joseph L. Balintfy, 22 Blue Hills Rd., Amherst, Mass.
Filed Jan. 29, 1973, Ser. No. 327,601
Int. Cl. G01d *13/22*
U.S. Cl. 235—124 **5 Claims**



A computional device for use in planning or constructing optimum balanced menus using a set of bar vectors consisting of bars strung on a string, the bar vectors being longitudinally slidable in slots in a board, which defines a field for computation with said vectors.

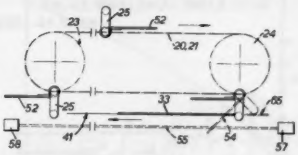
3,801,779
SNOWFALL LEVEL DETECTOR
David G. Ver Sluis, 8897 Vergennes, S.E., Ada, Mich.
Filed May 3, 1972, Ser. No. 249,826
Int. Cl. G06b *7/00*
U.S. Cl. 250—222 R **14 Claims**



Apparatus for detecting the occurrence of an amount of snowfall, or of drifting snow, above a predetermined level and providing a signal at a remote location. A light source, a light sensor, and a plurality of apertured baffle members are mounted on a base plate. The light source is arranged to project a beam of light through the apertures in the baffle members at a predetermined distance above the base plate for detection by the sensor. Upon interruption of the light beam by accumulated snow a signal is produced to activate an alarm or the like to thereby indicate that a predetermined level of snowfall or drifted snow has occurred.

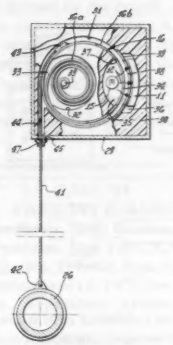
3,801,780
FAULT DETECTION SYSTEMS FOR CONVEYORS
David Wood, Clevedon, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, Great Britain
Filed Nov. 6, 1972, Ser. No. 303,944
Int. Cl. H01j *39/12*
U.S. Cl. 250—223 R **6 Claims**

A conveyor for carrying documents or envelopes comprising an endless flexible belt provided with spaced carriers in the form of metal rods with multiple bends moving along ribbed or grooved supporting surfaces, the belts being also formed with spaced teeth to engage toothed driving sprockets, so that the positions of the conveyed articles are accurately determined. Below the supporting surface sorting boxes are located each with a diverter gate movable into the path of the travelling articles, and a number of such conveyors are positioned end-to-



end to transfer mail from one to the next. Each of the carrier rods can twist about its axis and has an opaque blade at one end arranged to interrupt a light beam and so produce an optical signal to stop the conveyor if an item of mail becomes jammed.

3,801,781
DISPLACEMENT MEASURING APPARATUS
Marvin A. Philippi, 8603 Roger Ct., Pico Rivera, Calif., and Harry W. Whitcomb, 732 Hillcrest St., El Segundo, Calif.
Filed Nov. 9, 1972, Ser. No. 305,122
Int. Cl. G01d *5/34*; **G02b** *9/14*
U.S. Cl. 250—231 R **7 Claims**



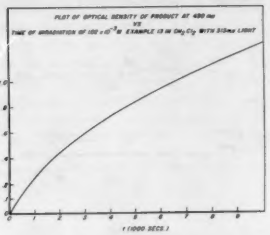
Displacement measurement apparatus comprises:

a. a cell operable in response to reception of light flux to generate electrical current,
b. a source of luminous flux directed toward the cell,
c. a shutter in the path of the light flux, at least one of the shutter, cell and source being relatively movable to control the amount of light flux incident on the cell, and
d. means responsive to said cell generated current to indicate the extent of said relative movement.

3,801,782
METHOD OF SELECTIVELY GENERATING FLUORESCENCE AND ITS SUBSEQUENT DETECTION
George Henry Dorion, Riverside, Calif., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of Ser. No. 848,578, Aug. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 764,312, Oct. 1, 1968, abandoned. This application Jan. 27, 1972, Ser. No. 221,470
Int. Cl. G01n *21/00*
U.S. Cl. 250—271 **9 Claims**

A system for storage and retrieval of information comprising the use of a non-fluorescent material capable of photocon-

version to a fluorescent material under light of a particular wavelength and which can be made to fluoresce, after such



conversion, by stimulating light radiation of a longer wavelength. A fluorescent image may be formed and detected by the system.

3,801,783

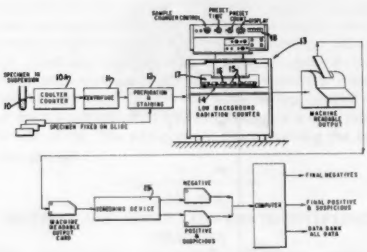
APPARATUS FOR SCREENING CYTOLOGICAL SPECIMENS

Leonard Caiola, Ridgewood, N.J., assignor to Information Utilization Corporation, New York, N.Y.

Division of Ser. No. 836,768, June 26, 1969, Pat. No. 3,678,148. This application July 22, 1971, Ser. No. 165,117

Int. Cl. G21h *5/02*

U.S. Cl. 250—303 **9 Claims**



A slide specimen of exfoliated cells is prepared in the usual manner for microscopic optical examination of a Papanicloaou Test, up to the point of staining. At this stage, instead of the ordinary stains, a stain containing a radioisotope is used. The slide with the radioisotope-bearing stain is thereupon passed through a radiation counter which gives an indication of the amount of radiation the slide emits, which indicates the amount of radioactive stain absorbed by the specimen. This relative absorption amount indicates the differential staining of the cellular material and forms the equivalent electronic differentiation of the specimens to the standard Papanicolaou optical differentiation as viewed through the microscope. In this way, the automatic radiation counter is used to substitute for the human element in the microscopic evaluation of the specimens.

3,801,784

SCANNING ELECTRON MICROSCOPE OPERATING IN AREA SCAN AND ANGLE SCAN MODES

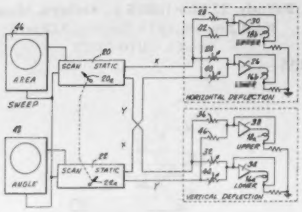
David B. Wittry, Pasadena, Calif., assignor to Research Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 243,984

Int. Cl. H01j *37/26;* **G01n** *23/04*

U.S. Cl. 250—306 **24 Claims**

Methods and means for operating a scanning electron microscope in an area scan mode in which an area of the specimen is scanned at a selected constant angle of incidence of the beam probe on the specimen, or in an angle scan mode in which the beam probe is kept at a selected point of incidence on the specimen but the angle of incidence is varied in



a scanning pattern. Convenient and rapid switching between the area scan mode and the angle scan mode is provided for fully utilizing the benefits of each mode. The capability for switching between these two modes of operation is particularly useful in crystallographic studies.

3,801,785

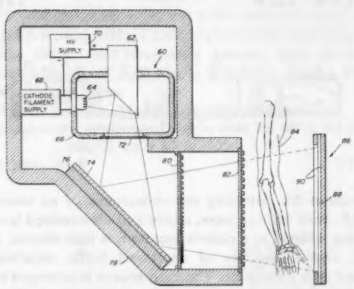
SPATIALLY MODULATED IMAGING SYSTEM

Harrison H. Barrett, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 1, 1972, Ser. No. 302,992

Int. Cl. G01t *1/18*

U.S. Cl. 250—321 **28 Claims**



Noncoherent radiation, such as X-rays, is spatially coded, directed through an object and spatially detected to form a spatially coded pattern, from which an image of the object may be reconstructed. The X-ray source may be formed by X-ray fluorescence and subtraction of the holographic images formed by two sources having energy levels predominantly above and below the maximum absorption range of an agent in the object may be used to enhance contrast in the reproduced image. Constant spatial frequency coding of the source may be used to produce a spatial carrier frequency to enhance detection of low spatial frequency components of the spatially coded pattern so that images may be a more easily reconstructed such as the optical reconstruction of spatially code formed by the off-center section of a Fresnel zone pattern by converting the detected intensity pattern to a diffraction or phase pattern.

3,801,786

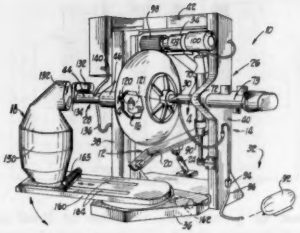
METHOD AND APPARATUS FOR INSPECTING TIRES

Theodore G. Neuhaus, Bay Village, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 186,985, Oct. 6, 1971, abandoned. This application Oct. 27, 1972, Ser. No. 301,529

Int. Cl. G03b 41/16

U.S. Cl. 250—360 48 Claims



A system for inspecting tires is disclosed in which a tire being inspected is inflated with pressurized gas and a rotating beam x-ray source is moved into the tire between the bead rims for directing x-rays through the wall of the inflated tire from rim to rim. An imaging system produces televised transparency images of the tire wall and means are provided for rotating the tire during inspection so that the tire wall is completely inspected.

3,801,787

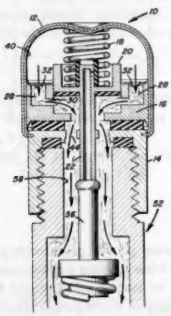
VALVE FOR RADIATION DETECTION OF LOW PRESSURE IN PNEUMATIC TIRES

Erich Cornelius Johnsen, 1205 Board St., Victoria, B.C., Canada

Filed Jan. 21, 1970, Ser. No. 4,713

Int. Cl. G01t 1/19

U.S. Cl. 250—388 7 Claims



A pressurized attachment for the valve of a pneumatic tire, the attachment housing, in a shielded manner, a small amount of radioactive material. The attachment has a pressure chamber on one end thereof, the other end communicating directly with the pneumatic tire. If the pressure in the tire falls below a predetermined limit, the radioactive material escapes from its shielded housing and flows into the tire. Radioactive emissions then pass through the housing of the tire and are detected by a sensing device. The sensing device is coupled to the instrument panel of the associated vehicle and serves to indicate a leak in the tire.

3,801,788

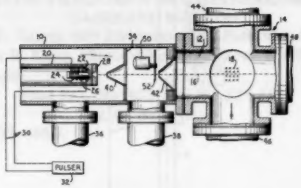
MASS MARKING FOR SPECTROMETRY USING PROGRAMMED MOLECULE CLUSTERS

Thomas A. Milne, Quivira, Kans., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Nov. 16, 1972, Ser. No. 307,085

Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250—41.9 ME 13 Claims



Mass marking in mass spectrometry is accomplished by molecule clusters having molecular weights at regular mass intervals over a mass range within which ions of a gas to be analyzed are expected. A marker gas (such as argon) is employed which is capable of forming molecule clusters in a controlled expansion through a nozzle into a region of reduced pressure. By preselecting or programming the source pressure of the selected marker gas, the intensity of the molecule clusters is optimized over the mass range of interest. A beam of such clusters is formed by the nozzle, and is directed into the ion source of a mass spectrometer. A fast acting valve at the nozzle may be employed to provide intermittent discharge of the marker gas, thereby reducing the gas loads on the vacuum pumping systems. For phase sensitive detection, a mechanical chopper in the path of the beam is utilized to modulate the beam to impart a characteristic signature to the ionized clusters.

3,801,789

CASSETTE HOLDER

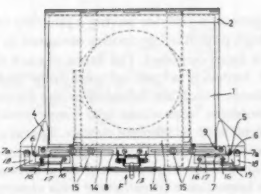
Pierre Lucien Jules James, Saint Gratien, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 217,648, Sept. 9, 1971, abandoned. This application June 11, 1973, Ser. No. 368,952

Claims priority, application France, Feb. 13, 1968, 68.139630

Int. Cl. G03b 41/16

U.S. Cl. 250—468 4 Claims



Cassette holder having two openings at opposite sides through which a cassette can be inserted and held in place by locking members at each opening. A longitudinally displaceable bar interconnects the two locking members and movement of the bar toward either of the locking members will tilt the locking member to permit insertion of the cassette.

3,801,790

MOVABLE X-RAY EXAMINING DEVICE

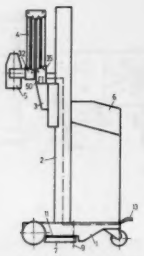
Horst Gotzl, and Manfred Rattner, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 13, 1973, Ser. No. 340,840

Claims priority, application Germany, Mar. 15, 1972, 2212510

Int. Cl. H01j 5/48, 39/12

U.S. Cl. 250—523 5 Claims



A movable X-ray examining device has an X-ray tube unit which is connected by a horizontally extendable arm swingable in horizontal direction with a stand located upon a carriage. The device is particularly characterized by supports movable sidewise out of the carriage and a locking device cooperating with the arm and the supports and permitting the pulling out of the arm only when the supports are fully moved out and permitting the return of the supports only when the arm is pulled in.

3,801,791

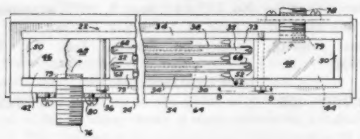
OZONE GENERATOR

Richard J. Schaefer, 16582 Murray Hill Ave., Detroit, Mich.

Continuation of Ser. No. 801,674, Feb. 24, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 198,937

Int. Cl. C01b 13/12

U.S. Cl. 250—532 27 Claims



An ozone generating device having a plurality of interleaved ground and high potential electrodes mounted in spaced relation with their faces opposed. The faces of each electrode are encapsulated between a pair of uniformly distributed low stress glass plates which are adhered to the faces of the electrode by a moisture impervious and ozone resistant flexible bonding material such as silicone rubber. Spacers are inserted between opposed glass plates to form passageways for air to be ozonized by an alternating electrical field between the electrodes. A low impedance transformer with closely spaced primary and secondary windings is used to supply an alternating current to the electrodes. A plurality of the ground and high potential electrodes are assembled into a cell which is encapsulated in an outer enclosure by a moisture impervious ozone resistant material such as silicone rubber. The use of a moisture impervious ozone resistant material to fabricate the electrode assemblies and encapsulate the cell reduces the tendency for arcing to occur between the electrodes and thereby materially increases the useful life of the cell.

3,801,792

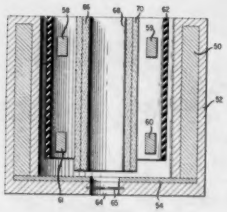
ELECTRON BEAM APPARATUS

Lawrence H. Lin, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1973, Ser. No. 363,024

Int. Cl. H01j 37/00

U.S. Cl. 250—398 2 Claims



Various components of a conventional electron beam apparatus are modified to achieve precise high-speed deflection and blanking of the electron beam. The modified apparatus is designed to be included, for example in a high-resolution automated electron beam exposure system for integrated-circuit fabrication.

3,801,793

COMBINED GAS-STEAM POWER PLANT

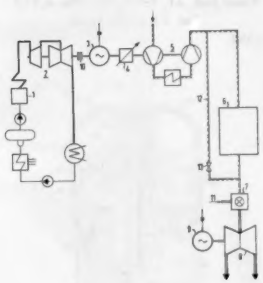
Konrad Goebel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed July 6, 1972, Ser. No. 269,438

Claims priority, application Germany, July 9, 1971, 2134192

Int. Cl. F02b 43/08

U.S. Cl. 290—2 5 Claims



Combined gas-steam power plant with peak energy storage includes a steam turbine driving a generator that is coupled by a torque converter to an air compressor for a gas turbine, a shaft clutch disengagable during operation of the power plant being located between the steam turbine and the generator associated therewith.

3,801,794

EMERGENCY LIGHTING EQUIPMENT

Robert E. Mauch, and Robert I. Sarbacher, both of Santa Monica, Calif., assignors to John C. Bogue, Santa Monica, Calif.

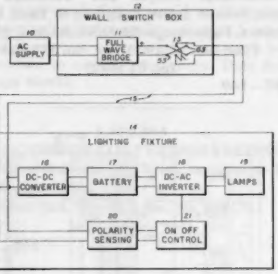
Filed Nov. 1, 1971, Ser. No. 194,371

Int. Cl. H02j 9/00

U.S. Cl. 307—66 15 Claims

This invention is concerned with an emergency lighting system that does not require the normal modification of build-

ing wiring that is required by conventional emergency lighting systems presently available. The apparatus of this invention



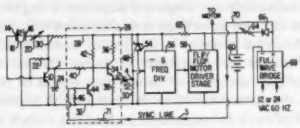
also lends itself to selective programing to meet special requirements of some emergency lighting installations.

3,801,795

MASTER CLOCK STANDBY SWITCHING CIRCUITRY

Chester Zajac, Thomaston, and John Baltrush, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 7, 1972, Ser. No. 287,174
Int. Cl. H02j *9/00*
U.S. Cl. 307—66 **13 Claims**



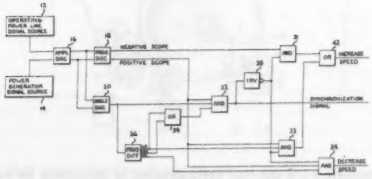
A power system for a master clock motor or the like which includes automatic switching circuitry for enabling instant switch-over from main power operation to standby power operation in the event of a temporary main power loss.

3,801,796

SYNCHRONIZATION SCHEME

Charles E. Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Oct. 30, 1972, Ser. No. 302,351
Int. Cl. H02j *3/08*
U.S. Cl. 307—87 **15 Claims**



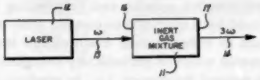
In a control system for automatically synchronizing and effecting connection of a power generator to an operating power line, means are provided for sensing differences in certain frequency and phase parameters existing between the output signal of the power generator and the signal on the operating power line and thereafter generating control signals for affecting the speed of the power generator to cause any differences existing between those frequency and phase parameters to fall within defined tolerable limits. When those defined tolerable limits are achieved, means are provided for generating and transmitting a control signal to effect connection of the power generator to the operating power line.

3,801,797

OPTICAL RADIATION FREQUENCY CONVERTER EMPLOYING PHASE MATCHED MIXTURES OF INERT GASES AND METHOD

Stephen E. Harris, 880 Richardson Ct., Palo Alto, Calif., and Andrew H. Kung, Blackwelder 4D, Escondido Village, Stanford, Calif.

Filed Jan. 29, 1973, Ser. No. 327,318
Int. Cl. H02m *5/04*
U.S. Cl. 307—88.3 **6 Claims**



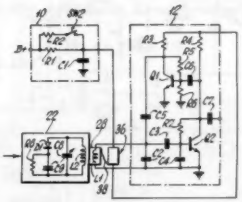
An optical radiation frequency converter including a cell containing a phase matched mixture of inert gas atoms, one of which is negatively dispersive and one of which is positively dispersive, and a source of monochromatic radiation of one frequency to be converted to another frequency positioned to project the monochromatic radiation through the cell whereby the phase matched mixture of inert gas atoms converts the radiation from the one frequency to the other frequency.

3,801,798

POWER TRANSFER CIRCUIT FOR MOMENTARILY ENERGIZING KEYABLE CONTROL CIRCUITS

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed May 17, 1973, Ser. No. 361,249
Int. Cl. H01h *43/00*
U.S. Cl. 307—98 **12 Claims**



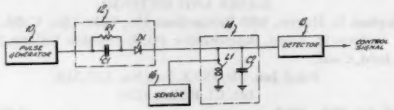
A power transfer circuit comprising a normally-open switch and connected between a source of electrical power and one or more sub-circuits in a keyable control circuit. The closing of the normally-open switch in the power transfer circuit causes the aforementioned sub-circuits to be energized so that they may respond to the coupling of a keying network to a predetermined element of the keyable control circuit. Preferably, the normally-open switch is disposed so that it is automatically closed when the keying network is operatively coupled to the keyable control circuit.

3,801,799

CAPACITANCE AND RESISTANCE-RESPONSIVE CONTROL CIRCUITS

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 14, 1972, Ser. No. 280,219
Int. Cl. H05
U.S. Cl. 307—116 20 Claims



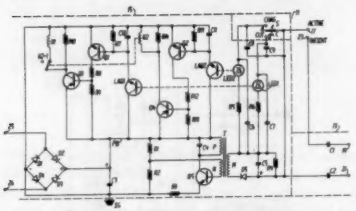
Control circuits for sensing and responding to impedance changes caused by a mammal in contact with or in proximity to an antenna or other sensor. Each circuit includes at least one tuned circuit which is periodically energized to cause it to "ring" at its natural frequency, i.e., to produce damped oscillations. Each tuned circuit includes an antenna or other sensor by which an external impedance is coupled to the tuned circuit. Thus, the oscillations in the tuned circuit are attenuated to a degree determined by the capacitive and resistive components of the external impedance. In the case of mammals, the resistive component is substantial and causes a marked change in the amplitude and duration of the damped oscillations in the tuned circuit, which are then enhanced and/or detected to produce a predetermined control signal.

3,801,800

ISOLATING SWITCHING CIRCUIT FOR AN ELECTROSURGICAL GENERATOR

David W. Newton, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

Filed Dec. 26, 1972, Ser. No. 318,177
Int. Cl. A61b *17/36*
U.S. Cl. 307—117 6 Claims



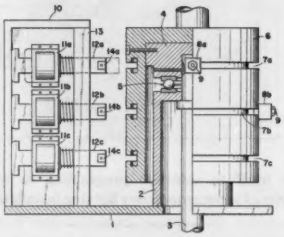
An isolating switching circuit suitable for use in an electrosurgical generator to transmit mode information from an electrosurgical instrument to an electrosurgical power generator is disclosed. A selected light emitting diode is energized in accordance with the setting of a mode of operation switch located in the electrosurgical instrument. The light thus emitted impinges on an associated light activated transistor. The thusly activated light activated transistor in turn controls the mode of operation of the electrosurgical power generator so that the desired cutting or coagulating R.F. potential is generated. Alternatively no light emitting diode is energized and the electrosurgical generator idles.

3,801,801

APPARATUS FOR CONTROLLING THE ANGLE OF ROTATION OF A ROTARY MEMBER

Matsuo Nishimura, Tokyo, and Tozaburo Tsujimura, Yokohama, both of Japan, assignors to Yasui Sangyo Company Limited, Fujinomuja-shi, Shizuoka-ken, Japan

Filed Mar. 5, 1973, Ser. No. 337,945
Int. Cl. H02j
U.S. Cl. 307—149 1 Claim



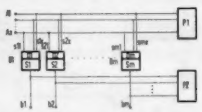
An apparatus for controlling the angle of rotation of a rotary member is adapted to be rotated by a drive mechanism. The apparatus includes a plurality of axially spaced circumferential grooves in the peripheral outer surface of the rotary member. A plurality of stops are mounted on the rotary member in such a manner that each stop is movable along one of the circumferential grooves and can be temporarily fixed at a selected point along the groove. A plurality of vertically aligned solenoids are disposed adjacent a segment of the rotary member and have their movable parts directed toward the circumferential grooves in the rotary member. Each solenoid is adapted to be energized to cause its movable part to protrude into the path of rotary movement of the associated stop on the rotary member. A limit switch is provided on the free end of each movable part so that the switch is operable in response to engagement by one of the stops to shut off the power supply to the drive mechanism to thereby discontinue the rotation of the rotary at the selected point.

3,801,802

INFORMATION STORAGE HAVING MONITORED FUNCTIONS

Karlhorst Barwig, and Roland Walker, both of Munchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 24, 1972, Ser. No. 300,324
Claims priority, application Germany, Oct. 25, 1971, 2153116
Int. Cl. G11c *29/00*; G06f *11/10*
U.S. Cl. 235—153 AM 6 Claims



An information storage arrangement is described in which the storage functions can readily be monitored. The storage comprises a plurality of functionally autonomous storage blocks. The blocks are connected to common supply lines, over which signals corresponding to the function being monitored are carried. A first verifier circuit is connected to the common supply lines following the point at which the last storage block is connected to these supply lines. The storage blocks are constructed to individually store only such small

portions of the stored information that functional errors occurring in a storage block or the individual lines supplying it from the common supply lines affect only small parts of the total stored information. The portion of the stored information affected is so small that errors from individual storage blocks, or their individual circuitry, do not compensate one another, so that an error will not go undetected by a second verifier connected to each of the output lines from the individual storage blocks.

3,801,803

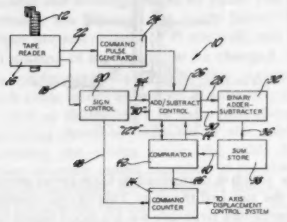
ELECTRONIC CONVERSION SYSTEM

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 11, 1972, Ser. No. 296,713

Int. Cl. G06f *5/02*

U.S. Cl. 235—154 **4 Claims**



Apparatus for converting displacement command pulses in an N/C system from Metric to English systems of measurement. The apparatus is entirely external to the N/C machine and employs relatively simple arithmetic units to effect the multiplication of both positive and negative displacement pulse quantities by a fractional conversion factor.

3,801,804

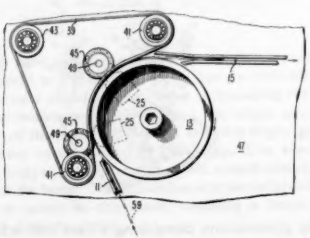
DRUM DRIVEN DOCUMENT BACK-UP ROLLER

William F. Von Glahn, Plymouth, and Ronald G. Shell, Dearborn Heights, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,463

Int. Cl. B65h *5/06;* **G06k** *7/08*

U.S. Cl. 235—61.11 D **15 Claims**



A high speed document sorter-reader having a magnetizing head, at least one read head disposed in a read station, and a transport drum for transporting documents through the read station utilizes a rim-driven roller for rotatably supporting and holding transported documents in close cooperating proximity with the read head, such roller being driven directly by the transport drum and at a uniform speed therewith when a document is not present in the read station, and driven by the transported document upon entry of the document thereinto, clearance of less than the thickness of a document being maintained between the roller and the read head when a document is not present in the read station, whereby the skewing of documents caused by inertial resistance to the leading edges thereof and wear to the roller and head are eliminated.

3,801,805

AUTOMATIC MONEY DISPENSING MACHINE

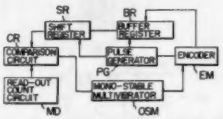
Yoshihiro Hatanaka, and Hideto Shigemori, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Hyogo-ken, Japan

Filed Dec. 29, 1971, Ser. No. 213,323

Claims priority, application Japan, Dec. 29, 1970, 45-121644; Dec. 29, 1970, 45-121649

Int. Cl. G06m *3/02, 3/10*

U.S. Cl. 235—177 **4 Claims**



An automatic money dispensing machine in which data is registered in a storage register comprising a plurality of digits, and the data to be compared with the dispensed money amount is successively divided into unit data or a unit data group by a data selective circuit, the divided unit data or data group being successively compared in a comparator with the counted content of a dispensed money counting circuit, and dispensation of the money is carried out in accordance with results of the comparison in the comparator. Furthermore, a particular automatic carry circuit is provided which shifts the digit in the storage register of the above-mentioned machine in two ways; one causing shifting of the digit when a coincidence signal is issued from the comparator, and the other causing shifting when the first effective numeral of an amount of money registered in the register is at a digit lower than a comparison reference digit designated in the register.

3,801,806

ANALYSIS OF DATA

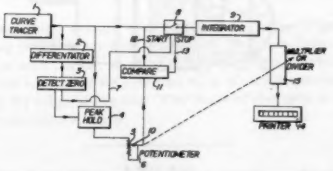
Ernest James Denney, Comberton, and Richard William Stokes, Loughborough, both of England, assignors to Cambridge Scientific Instruments Limited, Cambridge, England

Filed Jan. 11, 1972, Ser. No. 216,984

Claims priority, application Great Britain, Jan. 12, 1971, 1344/71

Int. Cl. G06g *7/18*

U.S. Cl. 235—183 **6 Claims**



In the analysis of data in the form of a peaked or humped curve such as a curve of Lorentzian or Gaussian shape, where it is desired to obtain a value representing the true area under the curve, eliminating distortion that may be present, a measurement is made of the area only between the peak value and a value representing a predetermined fraction of that peak;

this can be done by scanning the curve, detecting the peak, starting the integration, then stopping it when the curve value has fallen to the predetermined fraction of that observed peak value; an appropriate factor is then applied to obtain the true area.

3,801,807

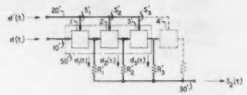
IMPROVED SHIFT REGISTER HAVING (N/2 - 1) STAGES FOR DIGITALLY SYNTHESIZING AN N-PHASE SINUSOIDAL WAVEFORM

Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1972, Ser. No. 301,430

Int. Cl. G06g *7/28*

U.S. Cl. 235—197 **6 Claims**



A method is disclosed for calculating appropriate output resistor values in the summing circuitry of a transversal filter featuring a shift register configured to digitally synthesize sinusoidal waveforms. Output resistor values calculated according to the method result in an improved circuit by allowing the elimination of the otherwise required last stage of the shift register and a reduction with respect to the prior art in the ratios of the values of the output resistors.

3,801,808

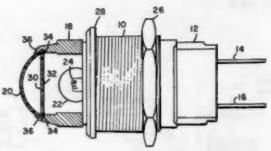
LIGHT SOURCE WITH RF INTERFERENCE SHIELD

Warren M. Johnson, Saint Marys, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jan. 31, 1973, Ser. No. 328,348

Int. Cl. G01d *11/28*

U.S. Cl. 240—2.1 **8 Claims**



A pilot lamp fixture having a transparent conductive shield for substantially reducing or eliminating RF interference which may be radiated from the lamp filament. The transparent shield may comprise a coating of clear conductive material, such as stannic oxide, on a transparent mica insert disposed between the lamp and the lens therefor, with the periphery of the conductive coating being in contact with the metal housing of the fixture.

3,801,809

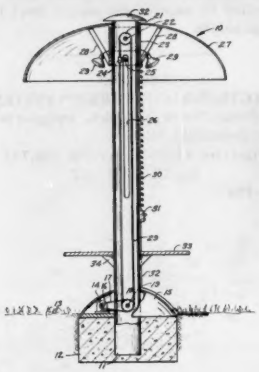
MOTOR DRIVEN PATIO COVER

Doyle D. Slade, Rt. 2, Box 262B, Purvis, Miss.

Filed Mar. 14, 1973, Ser. No. 341,140

Int. Cl. F21v *33/00*; **A47b** *97/00*

U.S. Cl. 240—2 R **3 Claims**



A device which is motorized to form cover means for furniture from the sun and the rain. This device consists primarily of an umbrella-like structure having flood lamps secured to it, the structure being raised and lowered by switch means secured to the pipe which slideably carries a sleeve secured to the umbrella-like structure.

3,801,810

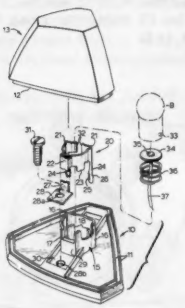
LAMP CONSTRUCTION

John Smith, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

Filed Nov. 29, 1972, Ser. No. 310,250

Int. Cl. B60q *1/00*

U.S. Cl. 240—7.1 R **18 Claims**

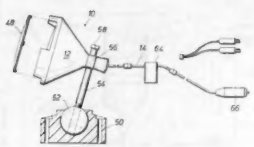


A lamp construction comprising a base and a lens having snap fit interconnecting engagement with the base. The base includes an integral tubular projection and a bulb receiving socket is slidingly received in the projection. The socket includes portions that have serrations thereon for frictionally engaging the sides of the projections to hold the socket in the base. Electrical connections are completed by resilient contact that engages the bulb in the base and an integral extension on the socket that provides electrical communication by means of a screw extending therethrough to the exterior of the base.

3,801,811
LIGHTING FIXTURE ASSEMBLY FOR TUNNELS AND OTHER LOCATIONS
Leo Geenens, 649 S. Tamiami Trl., Venice, Fla.
Filed Nov. 15, 1971, Ser. No. 198,525
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 R 7 Claims

This lighting assembly for tunnels and like locations, comprises spaced cable boxes attached to an outer surface of a wall of the tunnel and interconnected by pipes. The power cables pass through the pipes to the cable boxes. The cable boxes and pipes are not embedded in the wall, and hence the location and spacing of the boxes can be changed. A bracket comprising a box for receiving a transformer, is detachably attached to each cable box. The bracket is swingably connected to the cable box so that when it is detached, therefrom the bracket can swing down to hang below the cable box to facilitate servicing the cables within the cable box. Each bracket carries an open ended chamber to receive adjacent ends of adjacent cartridges for fluorescent lamps. With such assembly, the installation can take place after the roadway and wall surfaces of the tunnel are in place, with greater facility, thus ensuring parallel relationship between the cable boxes and the roadway of the tunnel.

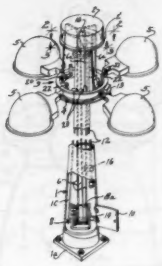
3,801,812
FISHING LIGHT
Vincent F. Palumbo; Russell C. Rivers, and Jack G. Horner, all of 7923 Hartford St., Houston, Tex.
Filed Nov. 29, 1972, Ser. No. 310,231
Int. Cl. F21v 21/00
U.S. Cl. 240—52 R 8 Claims



A fishing light wherein a typical automobile headlight fixture is encased in a specially shaped body preferably formed of a low density styrofoam structure surrounding the fixture. The plastic structure incorporates a lip which engages the outer edge of the lamp and further includes finger grip holes enabling easy replacement of the lamp. The surrounding styrofoam body is spaced from the lamp a small distance at the back side of the lamp. The device has a center of gravity which causes it to invert in the water, focusing a beam of light downwardly into the water.

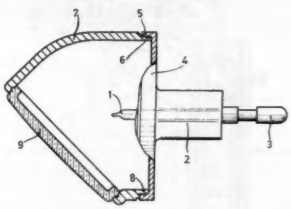
3,801,813
COMBINATION MAST AND LIGHT RAISING AND LOWERING APPARATUS
Mogens Kiehn, 1740 Waukegan Rd., Glenview, Ill.
Filed Sept. 14, 1972, Ser. No. 289,090
Int. Cl. F21v 21/36
U.S. Cl. 240—64 7 Claims

A light carrying frame preferably in the form of a ring-like structure in spaced encircling relationship to a mast is provided with supporting cables extending upwardly from the frame and around pulleys at the top of the mast. The cables pass down through the mast to a windlass apparatus at the bottom thereof for raising and lowering the portion of the cables extending upwardly from the frame. Releasable supporting



means are provided adjacent the upper portion of the mast for supporting the weight of the light carrying unit when it is raised to a lighting position. Signalling means are provided for signalling to the operator below when the light carrying unit is in its lighting position at the upper portion of the mast.

3,801,814
NIGHT-LIGHT
Gerardus Wilhelmus Maria Arts, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 22, 1973, Ser. No. 325,851
Claims priority, application Germany, Feb. 11, 1972, 7205183
Int. Cl. F21v 17/02
U.S. Cl. 240—73 QD 2 Claims

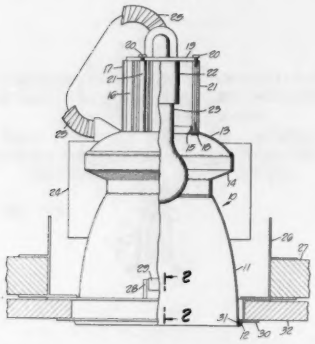


The innovation relates to a night-light which comprises a cap having two contact pins with which the night-light can be inserted in wall socket. A glow discharge lamp is present on the cap and is covered by a curved tube of an opaque material adjoining the edge of the cap. The front of the tube is closed by a light pervious window.

3,801,815
DOWNLIGHT WITH MULTIPLIER CONE
Peter J. Docimo, Northridge, Calif., assignor to Marvin Electric Manufacturing Company, Los Angeles, Calif.
Filed Feb. 14, 1973, Ser. No. 332,350
Int. Cl. F21s 1/02, 3/02, 5/00
U.S. Cl. 240—73 BC 5 Claims

A downlight with a multiplier cone is disclosed which has a unitary structure a parabolic reflector section and a multiplier

cone section, thereby permitting a conventional incandescent light bulb to be used in place of a reflector lamp or spotlight. The downlight has been so designed as to accommodate a reflector type lamp or conventional incandescent light bulb.



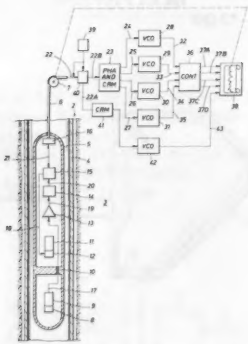
The downlight cooperates with a plaster frame on which are mounted spring clips which permit adjustment of the fixture to conform to ceiling contour. Further, the downlight may be installed or replaced after completion of the ceiling.

3,801,816

WELL LOGGING SYSTEM AND METHOD

Dan McCay Arnold, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed May 25, 1971, Ser. No. 146,708
Int. Cl. G01v *5/00*
U.S. Cl. 250— 270 **10 Claims**



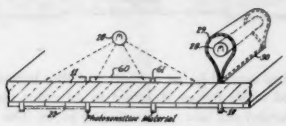
A radioactivity well logging system is provided for making both a conventional log and a novel spectral analysis of the activation-produced radiation during the same trip through the borehole. The neutron source is pulsed to provide successive irradiation and quiescent intervals, and the resulting radiation may be detected during the irradiation intervals to provide conventional measurements such as an N-gamma log. During each quiescent interval, and after the neutrons produced during the preceeding irradiation interval have disappeared, a spectral measurement is made of the radiation emitted by the unstable isotopes in the earth. The signals from a multichannel analyzer may further be examined by comparison with a predetermined composite spectrum assumed to relate to a predetermined particular lithology.

3,801,817

CATHODE RAY TUBES WITH TARGET SCREENS AND THE MANUFACTURE THEREOF

David M. Goodman, 38 Debra Ct., Seaford, N.Y.

Division of Ser. No. 772,639, Nov. 1, 1968, Pat. No. 3,598,628.
This application Aug. 12, 1970, Ser. No. 63,331
Int. Cl. G01j *39/18*
U.S. Cl. 250—365 **29 Claims**



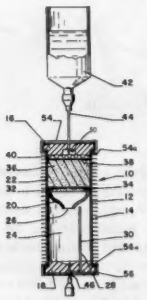
Point light sources and elongated light sources are disclosed which comprise light pipes in the form of elongated and funnel shaped transparent scintillators. To increase the intensity of the light at the exit terminal of the light pipes, they have tapered sides where the thickness increases in the direction of the exit terminal. Application of these light sources to the photo-fabrication of line-screen and dot-screen cathode ray tubes is disclosed.

3,801,818

RADIOACTIVE GENERATOR WITH PERMEABLE CLOSURE

Harry J. Hulit, Amboy, and Thomas V. Czaplinski, Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 24, 1972, Ser. No. 300,092
Int. Cl. G21h *5/00*
U.S. Cl. 250— 496 **6 Claims**



A radioactive generator has silicone or neoprene closures to vent the gases released during the generation of radioactive eluate. The generator comprises a hollow, generally cylindrical body in which a column of radioactive material is contained, and the ends of which are closed by silicone or neoprene stoppers fabricated from material such as methylvinylpolysiloxane or polychloroprene. The generator can be subjected to sterilizing procedures such as autoclaving and retain its sterile condition, while at the same time gases generated internally may be vented through the closures.

3,801,819

FIBER OPTIC INFORMATION TRANSMISSION SYSTEM

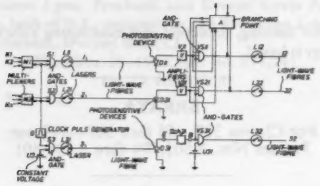
Horst Ohnsorge, Hauptstrasse 37, D-7901 Erstetten, Germany

Filed Sept. 8, 1972, Ser. No. 287,263

Claims priority, application Germany, Sept. 8, 1971, 2144780

Int. Cl. H04b 9/00

U.S. Cl. 250—199 6 Claims



In the transmission of data by conducting laser beams through individual light conducting glass fibers, the several transmitted beams are kept at a sufficient amplitude and in phase with one another by being periodically interrupted and regenerated simultaneously by the same control pulse.

3,801,820

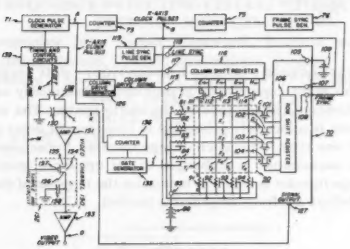
METHOD AND APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READOUT

Charles W. Eichelberger, Schenectady, and Hubert K. Burke, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,194

Int. Cl. H01j 39/12

U.S. Cl. 250—211 J 10 Claims



A plurality of radiation sensing and storage sites are provided on a substrate of semiconductor material arranged in a plurality of rows and columns. Each site includes a row oriented plate and a column oriented plate to form a pair of closely coupled capacitive cells with the substrate. A plurality of row conductor lines are provided, each connected to the row oriented plates of a respective row. A plurality of column conductor lines are also provided, each connected to the column oriented plates of a respective column. Means are provided for selectively isolating the conductor lines fron the substrate. During read out of charge stored in a particular site a selected row line and a selected column line are connected in circuit with the substrate. Accordingly, the charge injected into the substrate by such action is integrated across the inherent capacitance associated with the preselected row line instead of the inherent capacitance of all of the conductor lines with respect to the substrate.

3,801,821

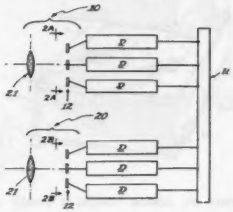
LARGE FIELD FLASH SENSOR

Louis F. Sharpe, Malverne, and Ernest A. Preuss, Massapequa, both of N.Y., assignors to Sun Chemical Corporation, New York, N.Y.

Filed June 14, 1973, Ser. No. 369,823

Int. Cl. H01j 39/12

U.S. Cl. 250—209 4 Claims



A large field flash sensor includes a plurality of optical sensing means each boresighted to a common wide field of view and signal detection means responsive to each optical sensing means.

3,801,822

EXPOSURE CONTROL DEVICE

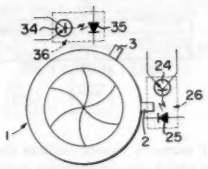
Saburo Numata, Urawa, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Filed Sept. 13, 1972, Ser. No. 288,884

Claims priority, application Japan, Sept. 14, 1971, 46-71510

Int. Cl. H01j 39/12

U.S. Cl. 250—214 P 7 Claims



In addition to a diaphragm, a filter turret is used to control the amount of light passing through a taking lens of a television camera or the like, whereby the range of exposure control is enlarged. When the diaphragm which is automatically controlled comes to its limit, a filter is changed to another filter having different transmittivity.

3,801,823

CREDIT CARD IDENTIFICATION DEVICE

Jonathan A. Korn, 12 E. 97th St., New York, N.Y.

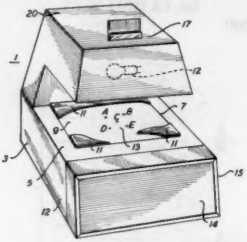
Filed July 8, 1970, Ser. No. 53,239

Int. Cl. G08c 9/06

U.S. Cl. 250—221 9 Claims

A device is disclosed which is capable of determining whether a person using a credit card is the true owner of the card. The person places his hand on a surface of the device. Light radiation is transmitted through the hand and received by a radiation sensitive device such as a photocell. The

photocell is mounted opposite the light source and on the obverse side of the hand. The transmission intensity pattern, amplitude, and other characteristics of this radiation passing through the hand are then compared with previously determined values for this person's hand. These previously determined values may be coded within a credit card or other similar medium.



If the coded values and the signal received by the photocells are the same, the person being tested is the correct individual and if they are not the same, he is not the correct individual.

3,801,824

COMPUTER MEMORY DEVICE

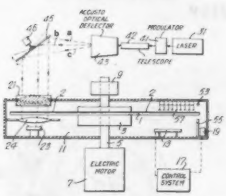
H. Keith Eastwood, Beaconsfield, Quebec, Canada; Robert Johannes, Williamsville; Clifford H. Griffiths, Rochester, both of N.Y., and Anibal Gavini, Buenos Aires, Argentina, assignors to Multi-State Devices Ltd., Doval, Quebec, Canada

Filed May 8, 1973, Ser. No. 358,283

Claims priority, application Canada, May 16, 1972, 142330

Int. Cl. G02f *1/28, 1/36;* **G11c** *11/44*

U.S. Cl. 250—211 **22 Claims**



A computer memory device utilizes the effect of a wide hysteresis loop which certain memory materials can exhibit at a predetermined critical temperature. A high optical transmission or reflection value and a low optical transmission or reflection value, respectively, will thereby be achieved, depending on whether the memory material is heated or cooled to reach this critical temperature. Laser beams of preselected wavelengths and power levels are directed onto this memory material through an optical arrangement to effect the writing or reading functions.

3,801,825

APPARATUS FOR DETECTING COHERENT RADIANT ENERGY

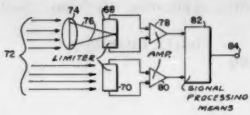
Jacob Schwartz, Arlington, and Charles S. Naiman, Brookline, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Division of Ser. No. 744,920, July 15, 1968, Pat. No. 3,620,597. This application Oct. 26, 1970, Ser. No. 84,106

Int. Cl. H01j *39/12*

U.S. Cl. 250—217 R **10 Claims**

Described herein is a method and apparatus for the nonlinear limiting of coherent radiant energy based upon the discovery of materials exhibiting non-linear absorption. This discovery provides a method upon which the operation of apparatus for limiting, detecting and modulating coherent radiant energy is based.



ERRATA

For Classes 307—66 thru 307—149 see:
Patents Nos. 3,801,794 thru 3,801,801

3,801,826

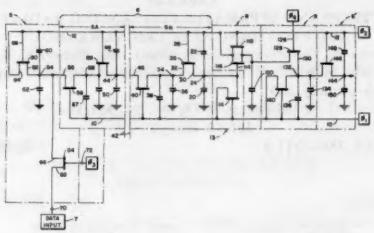
INPUT FOR SHIFT REGISTERS

Stanley R. Gorski, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 12, 1972, Ser. No. 252,696

Int. Cl. H03k *23/22*

U.S. Cl. 307—221 C **16 Claims**



A bucket-brigade (charge-transfer-type) shift register wherein an input capacitance is provided substantially equal to the interstage capacitance of the shift-register. The input capacitance is selectively grounded in response to input data signals of one type, after each charge transfer. Subsequently, the input capacitance is recharged to the optimum level for data charge transfer in order to maximize the number of stages possible before a refresh amplifier is needed.

3,801,827

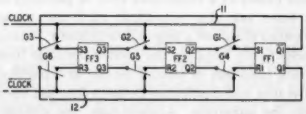
MULTIPLE-PHASE CONTROL SIGNAL GENERATOR

Carlo Heinrich Sequin, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1972, Ser. No. 295,369

Int. Cl. H03k *21/00*

U.S. Cl. 307—223 **8 Claims**



A plurality of flip-flops are serially connected into a ring by switches which are controlled by a one-phase clock pulse and

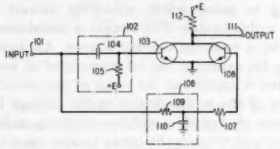
its logical complement. In response to the one-phase clock pulses there are produced multiple-phase control signals with controllable partial overlap of successive phases. The overlap is equal to the width of the one-phase clock pulse. The apparatus is especially useful for providing three-phase clock pulses for driving charge coupled devices and is readily integrable in the form of standard logic gates.

3,801,828

PULSE WIDTH DISCRIMINATOR

Dale Everett Lynn, Freehold, and Everett Lewis Poll, Brick Town, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1972, Ser. No. 317,941
Int. Cl. H03k *5/20*
U.S. Cl. 307—231 **3 Claims**



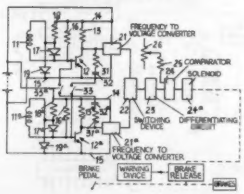
A pulse width discriminator is disclosed which discriminates between horizontal sync pulses and vertical sync pulses by producing an output pulse in response to the trailing edge of each horizontal sync pulse and inhibiting an output pulse that would otherwise be produced in response to the trailing edge of each vertical sync pulse.

3,801,829

FREQUENCY DETECTING CIRCUIT WITH BUILT-IN TESTING ARRANGEMENT

Christopher John Sutton, Tamworth, England, assignor to Girling Limited, Tyseley, Birmingham, England

Division of Ser. No. 167,411, July 29, 1971. This application Feb. 5, 1973, Ser. No. 329,825
Int. Cl. 307 *247 A;* **H03k** *5/20*
U.S. Cl. 307—233 **2 Claims**



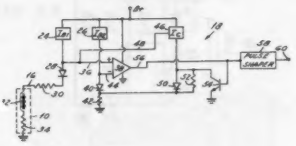
In a frequency detecting circuit, two frequencies are produced, and are converted to d.c. voltages by a pair of frequency to voltage converters. Switch means is then used to connect the output from one or other of the converters to a load. A test facility is provided consisting of two transistors and associated capacitors and windings which, when switches in the circuit are closed, simulate a predetermined frequency.

3,801,830

SIGNAL AMPLIFICATION CIRCUIT WITH PHASE DETECTING MEANS AND VARIABLE SIGNAL LEVEL RECOGNITION MEANS

Wesley D. Boyer, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 5, 1973, Ser. No. 329,922
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **10 Claims**



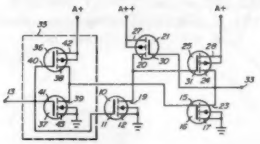
A circuit is described for generating an output signal pulse of substantial uniform magnitude in response to an input signal which may be variable over a range of signal magnitude such that large signal noise may exceed the magnitude of the small signals. The circuit provides automatic threshold adjustment in response to the magnitude of the immediately preceding input signal to discriminate against noise signals on the input lead. The circuit also provides for automatically switching out of the threshold controlling means when the input signal threshold value has been exceeded so that the turning off of the output signal may be accomplished substantially in response to the "zero voltage crossing" of the input signal to provide an electrical event which may have a predetermined time relationship to a sensed mechanical event for subsequent utilization purposes.

3,801,831

VOLTAGE LEVEL SHIFTING CIRCUIT

John S. Dame, Oak Park, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 13, 1972, Ser. No. 297,547
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **19 Claims**

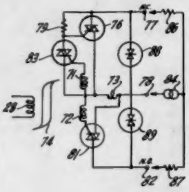


A voltage level shifting circuit includes a pair of transistors of one conductivity type arranged in a bistable configuration, and a pair of transistors both of another conductivity type each arranged as a switch for operating the bistable circuit. One of the two switches is operative to conduct in response to a first voltage or reference potential. The bistable is operative in response to the first switch being conductive to switch to a first state and couple the reference potential to the output. The bistable is operative in response to the second switch being conductive to switch to the second state and couple a second voltage greater than the first voltage to the output.

3,801,832
SOLID-STATE RELAY

Michael F. Joyce, Chicago, Ill., assignor to North American Philips Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 829,273, June 2, 1969.
This application Apr. 29, 1970, Ser. No. 32,794
Int. Cl. H03k 17/72
U.S. Cl. 307—252 B 11 Claims

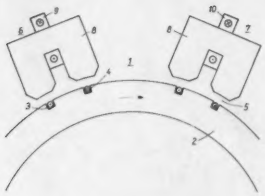


A solid-state relay comprising, in place of the coil of an ordinary relay, an electronic circuit including an energy-storage reactive element and a solid-state negative resistance component connected to the reactive element and having a negative resistance or a breakdown or break-over characteristic. In place of the metallic contacts of an ordinary relay, this invention includes solid-state means having a relatively high impedance condition and a condition of relatively low, or substantially zero, impedance. Coupling means, which may include inductive elements, light-emissive and light-sensitive elements, crystals, or other energy transmission elements, connect the "coil" part of the circuit to the "contact" part while providing electrical isolation between the two parts.

3,801,833
PULSE GENERATOR FOR A BRUSHLESS DIRECT-CURRENT ROTOR EXCITED ELECTRICAL MACHINE HAVING ROTOR MOUNTED THYRISTORS

Wilhelm Leitgeb, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed July 12, 1972, Ser. No. 270,925
Claims priority, application Germany, July 23, 1971, 2137918
Int. Cl. H02k 29/02
U.S. Cl. 318—254 7 Claims

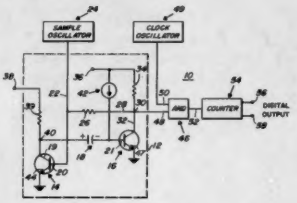


A pulse generator is disclosed for generating control voltages for the revolving thyristors of a brushless direct-current excited electrical machine equipped with an exciter machine. The pulse generator includes a rotor mounted on the rotor shaft of the brushless machine, a winding carried by the rotor of the pulse generator which has poles and phases corresponding in number to the poles and phases of the exciter machine, and at least two stationary magnetic systems disposed opposite the rotor of the pulse generator. The magnetic systems are displaced with respect to each other by a specific electrical angle so that these systems induce voltages in the rotor winding of the pulse generator which add to form a sum voltage adaptable for triggering the thyristors.

3,801,834
ANALOG TO PULSE WIDTH CONVERTER

Chi Sun Lai, Lake Zurich, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 26, 1972, Ser. No. 300,955
Int. Cl. H03k 5/04
U.S. Cl. 307—265 5 Claims

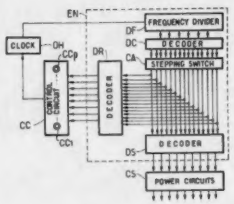


An analog to pulse width converter circuit includes a monostable multivibrator. The circuit is maintained in a first stable state by a constant current source. An analog voltage representing, for example, the oil pressure of an internal combustion engine is applied at the input of the circuit to charge the capacitor of the multivibrator to the voltage level of the analog voltage. A sample oscillator applying pulses periodically to the circuit triggers the latter to operation in a second, active state, whereby an output is provided from the circuit. Upon operation to the active state, the constant current source charges the capacitor in the opposite direction; the reverse charging time being determined by the original charge on the capacitor at the time of application of the trigger pulse. The duration of the circuit output is thus equal to the reverse charging time and directly related to the voltage level of the analog voltage. Additional circuitry including a clock oscillator, AND gate and pulse converter may be employed in conjunction with the analog to pulse width converter circuit to provide an analog to digital converter.

3,801,835
MULTIPHASE SIGNAL GENERATOR

Antoine Tasso, Immeuble Steiger, Corniche du Fleuve, Beyrouth, France

Filed Feb. 20, 1973, Ser. No. 333,609
Claims priority, application France, Feb. 28, 1972, 72.06688
Int. Cl. G08g 1/07; H03k 5/13
U.S. Cl. 307—293 11 Claims



Multiphase signal generator having cyclic operation, for example for controlling signal lights at a highway crossroads. A digit assembly counts clock pulses and controls output amplifiers. Moreover, it successively selects impedances each controlling the clock pulse frequency during one or several phases of the cycle. These impedances are adjustable individually. A fast auxiliary clock enables certain phases of the cycle to be shortened as a function of outside signals.

3,801,836

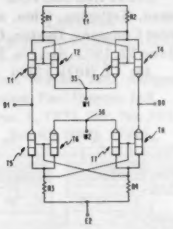
COMMON EMITTER TRANSISTOR INTEGRATED CIRCUIT STRUCTURE

Paul P. Castrucci, Poughkeepsie; Edward G. Grochowski, Wappingers Falls; William D. North, Poughkeepsie, and Thomas L. Palfi, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 842,195, July 16, 1969, Pat. No. 3,648,130. This application Jan. 7, 1972, Ser. No. 216,312

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **3 Claims**



A planar integrated semiconductor circuit having common emitter transistor elements isolated from each other and from other transistors by the emitter regions which form a PN or rectifying junction with the body of the semiconductor member in which the integrated circuit is formed. In a semiconductor member or body of one type conductivity, a plurality of emitter regions of opposite type conductivity extend from one planar surface of the body. One or more of the emitter regions each have a plurality of discrete base regions of the one type conductivity extending from said planar surface fully enclosed within the emitter region. Each of the base regions in turn has at least one collector region enclosed within it at the planar surface. The emitter region has a higher majority carrier concentration than the majority carrier concentration within its enclosed base regions. The rectifying junction formed by the opposite conductivity emitter region with the one type conductivity semiconductor body serves to isolate the emitter regions from each other.

3,801,837

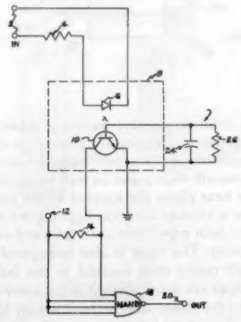
PHOTOCOUPLING LINE ISOLATION

Logan L. Pease, Bountiful, and Robert W. Huggins, Jr., North Salt Lake, both of Utah, assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 161,470, July 12, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,040

Int. Cl. H01l *15/00*

U.S. Cl. 307—311 **5 Claims**



A signal isolation and noise suppression circuit wherein electrooptical signals from a light-emitting diode of a signal source circuit are coupled to a phototransistor of a signal receiving circuit while physically isolating the signal receiving circuit from the source. The development also comprises a noise suppressing circuit.

3,801,838

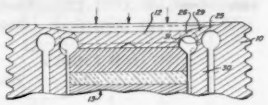
PIEZOELECTRIC PRESSURE TRANSDUCER

Walter P. Kistler, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed May 19, 1972, Ser. No. 255,191

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.7 **17 Claims**



A piezoelectric pressure transducer particularly adapted for measuring fluid pressure up to and above ballistics levels of the order of 75,000 pounds per square inch with an accurate, linear response over a wide pressure range. The piezoelectric sensing element is housed in a cylindrical sleeve which is threaded into a wall of the chamber within which the pressure to be measured is developed. An end wall extending across the end of the sleeve is exposed to the pressure and deflects, compressing the piezoelectric element to generate an electric signal representing the pressure. A supporting wall for the end wall is located between the sensing element and the housing sleeve. Two flexure zones are formed in the end wall, one between the piezoelectric element and the supporting wall and the other between the wall and the sleeve. The supporting wall is connected with the end wall through a third flexure zone. The compliance of the supporting wall is less than the compliance of the piezoelectric element but greater than the compliance of the housing sleeve. Deformation of the housing sleeve, as by pressure on the mounting threads, is accommodated by the flexure areas and error creating stress on the piezoelectric element is minimized.

3,801,839

MECHANICAL TO ELECTRICAL TRANSDUCER DEVICE

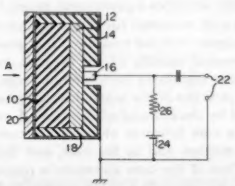
Kiyotoshi Yo, Tokyo, Japan, assignor to Rion Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1972, Ser. No. 311,433

Claims priority, application Japan, Dec. 3, 1971, 46-98188

Int. Cl. H01v *7/02*

U.S. Cl. 310—8 **4 Claims**



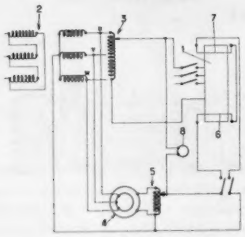
A transducer element is disclosed herein made of, for example, a vulcanized chloroprene elastomer mixed with channel black to exhibit electrostrictive properties and biased with a DC voltage to convert a mechanical impact or vibration to corresponding electrical energy.

3,801,840

METHOD AND APPARATUS FOR REGULATING THE SPEED OF AN ASYNCHRONOUS ELECTROMAGNETIC MACHINE HAVING AN OPEN MAGNETIC CIRCUIT

Michel Kant, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche Anvar, Paris, France

Filed Feb. 7, 1972, Ser. No. 223,917
Claims priority, application France, Feb. 8, 1971, 71.04086
Int. Cl. H02k 41/02
U.S. Cl. 310—13 11 Claims



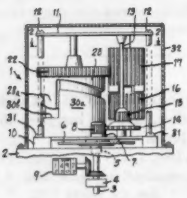
Asynchronous electromagnetic machine having an open magnetic circuit has a supplementary winding at each end of its field winding and the phase of the current supplied to these supplementary windings is varied to produce a variable difference between the phase in said supplementary windings and one of the phases in the main field winding.

3,801,841

DRIVE GEARING FOR GENERATOR OF ELECTRICAL SIGNAL PULSES

Albert E. Hall, Islington, Ontario, Canada, assignor to Neptune Meters Limited, Toronto, Ontario, Canada

Filed Jan. 3, 1973, Ser. No. 327,932
Int. Cl. H02k 7/06
U.S. Cl. 310—37 5 Claims



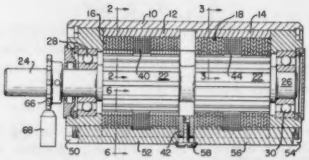
The generator includes a permanent magnet and a concentric stationary coil, mounted for relative axial translation. The permanent magnet and the coil have rest positions in which two poles, directed radially of the magnet, are aligned with two flanges on a stationary core member which supports the coil. The rest position of the magnet is determined by its magnetic field and by the contour of the core. A cooperating cam element and a cam follower element are connected respectively to the magnet and to the coil, and follow their axial movements. One of the cam elements is rotated by the rotation of the meter, through a drive gearing including two elements constructed to provide for a substantial backlash. As the meter turns, the cam and follower cause relative axial movement between the magnet and the magnet core, away from their rest positions, being driven slowly by the meter. The backlash between the gearing elements is taken up at this time by the driving force acting through the cam and follower. Substantially no current is induced in the coil at this time. When the cam follower reaches the end of a helical riser on the cam, the follower drops off the riser of the cam and into a recess on the follower so that the magnet is restored to its rest position, with a slight amount of over-travel. During this rapid return, a sharp pulse of electrical current is produced in the coil and is delivered to appropriate pulse counting mechanism located remotely from the meter. The backlash in the gearing is freed at this time, so that there is no frictional engagement between the cam and follower during this rapid return.

3,801,842

STEPPING MOTOR

William S. Touchman, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed June 27, 1972, Ser. No. 266,753
Int. Cl. H02k 37/00
U.S. Cl. 310—49 1 Claim



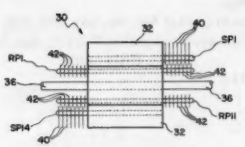
A stepping motor includes a single piece rotor with shafts connected thereto on each end of the rotor, and a pair of coils circumventing the rotor and encased within stators, which stators are positioned adjacent the rotor and spaced from each other. The energization and de-energization of the respective coils provides for one complete step of operation by the pulsing of one coil under stated conditions.

3,801,843

ROTATING ELECTRICAL MACHINE HAVING ROTOR AND STATOR COOLED BY MEANS OF HEAT PIPES

James C. Corman, Scotia; Robert F. Edgar, Schenectady; Michael H. McLaughlin, and Russell E. Tompkins, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 16, 1972, Ser. No. 263,665
Int. Cl. H02k 9/00
U.S. Cl. 310—52 7 Claims



A polyphase induction motor having a rotor and a stator, each having heat pipes incorporated therein, is disclosed. The stator is comprised of a stack of laminations having radial slots therein which contain heat pipes as well as electrical conductors. The stator heat pipes are located in the stator slots and extend axially to a remote location beyond the stator and the rotor. The stator heat pipes contain wicks and contain a two-phase fluid coolant. The rotor is also comprised of a stack of laminations with radial slots located in the outer periphery thereof. Heat pipes are incorporated in the rotor slots and, like the heat pipes in the stator slots, extend axially to a remote location beyond the rotor and the stator. The rotor heat pipes also serve as electrical conductors as well as heat exchangers for cooling the rotor. Thus, all of the rotor heat pipes are elec-

trically interconnected by end rings located at the axial extremities of the rotor. The rotor heat pipes also contain a two-phase fluid coolant. However, because centrifugal force promotes condensate return within the rotor heat pipes wicks need not be used in the rotor heat pipes. Cooling fins are provided on those sections (condenser sections) of the heat pipes which extend axially beyond the rotor and the stator thereby forming air heat exchangers. Moreover, the fins on the moving rotor heat pipes act as moving fan blades and, being located proximate to the cooling fins on the stator heat pipes, effectively form a single-pass, forced-convection, air heat exchanger.

3,801,844

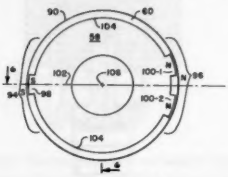
ROTOR MEMBER FOR ROTARY MAGNETIC POSITION INDICATOR

Gilbert V. Steele, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Dec. 1, 1972, Ser. No. 311,435

Int. Cl. H02k *37/00*

U.S. Cl. 310—156 **1 Claim**



A rotor member for a rotary magnetic position indicator incorporating two abutting permanent magnets. The first permanent magnet is cylindrical and has oppositely polarized areas at the respective extremities of a diameter. The second permanent magnet has at least two polar projections joined by cylindrical surface portions, the projections being oppositely polarized. The magnets are oriented with the polarized areas and projections of the same polarity being generally axially aligned.

3,801,845

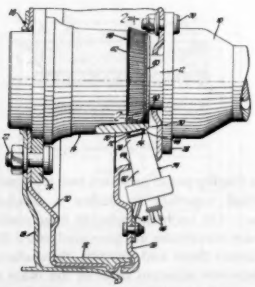
ROTATIONAL CHARACTERISTICS SENSING AND SIGNAL GENERATING MECHANISM AND A MAGNETIC FIELD INTERRUPTER THEREFOR

Willis A. Gavitt, Sr., Ionia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1972, Ser. No. 271,249

Int. Cl. H02k *19/24*

U.S. Cl. 310—168 **1 Claim**



A vehicle wheel hub is provided with a frusto-conical end surface having a shoulder adjacent the smaller circumferential side. A magnetic field probe is mounted in radially spaced relation to the frusto-conical surface, and an elastic garter member made of a magnetic field modifying material is positioned on the frusto-conical surface. The garter member has a plurality of raised surfaces which, when rotating with the hub relative to the probe, interrupts the magnetic field sensed by the probe so that signals which reflect the rotational characteristics of the hub are generated in the probe. The signals may be related to hub rotational velocity or hub acceleration characteristics, for example.

3,801,846

X-RAY TUBE WITH A ROTARY ANODE

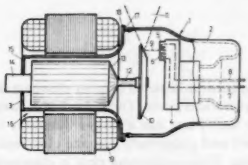
Klaus Haberrecker, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1973, Ser. No. 341,484

Claims priority, application Germany, Mar. 17, 1972, 2213184

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **5 Claims**



An X-ray tube wherein the anode is driven by an induction motor and is provided with a focal point, the cathode being directed upon the focal point path, the rotor of the motor being connected with the rotary axle of the anode and being located within the vacuum case, while the stator is located outside of the case, and wherein the case in the part between the rotor and the stator consists of metal. The tube is particularly characterized in that this metal part is a poor conductor of electrical current.

3,801,847

X-RAY TUBE

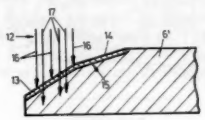
Kurt Dietz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 6, 1972, Ser. No. 295,490

Claims priority, application Germany, Nov. 4, 1971, 2154888

Int. Cl. H01j *35/08*

U.S. Cl. 313—60 **3 Claims**



An X-ray tube wherein electrons accelerated by an electrical voltage strike an anode which carries at least upon the surface receiving the electrons a thin layer of a substance having a high density which lies upon a body of lesser density. The invention is particularly characterized in that the layer is thinner than the depths of penetration of electrons in the material of the layer produced by acceleration voltages used for creating the rays.

3,801,848

TELEVISION CAMERA TUBE WITH MOUNTING ASSEMBLY FOR GRID ADJACENT PHOTOCONDUCTOR

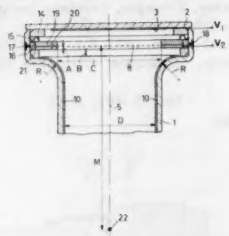
Johannes Hendrikus Theodorus Van Roosmalen; Petrus Franciscus Antonius Haans; Johannes Van Esdonk, and Johannes Petrus Hornman, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,012

Claims priority, application Netherlands, Sept. 4, 1970, 7013097

Int. Cl. H01j *31/38, 29/02*

U.S. Cl. 313—65 A **4 Claims**



A television camera tube having an elongate envelope comprising two cylindrical parts. The cylindrical part which is connected to the face plate has a larger diameter than the other cylindrical part and comprises a gauze electrode secured to a supporting ring. This supporting ring is clamped between the face plate and the neck between the two cylindrical parts by means of resilient pressure means. A circular rounding of the neck on the side of the cylindrical part with the smallest diameter is to be preferred, said rounding being covered with a conductive layer. A few dimensions are given related to the diameter of the cylindrical part of the smallest diameter. The ratio between the voltages at the gauze electrode and the conductive layer preferably is between 1.65 and 2.35.

3,801,849

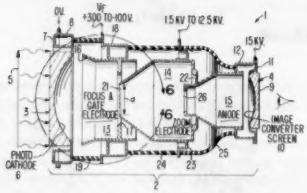
VARIABLE MAGNIFICATION IMAGE TUBE

John Edgecumbe, Upland, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 30, 1969, Ser. No. 846,107

Int. Cl. H10j *29/46, 29/00*

U.S. Cl. 313—102 **5 Claims**



A variable magnification image intensifier tube (zoom tube) is disclosed. The zoom tube includes a photocathode for converting a photon image into an electron image. An image converter screen is provided for converting the electron image into an intensified optical image for viewing or use. A focus electrode, a zoom electrode and an anode electrode, are positioned between the photocathode and the image converter screen for accelerating and focusing the electron image upon the image converter screen. An electron entrance opening in the zoom electrode is dimensioned so that the electron image pattern incident on the image converter screen is in focus at both the high and low ends of the magnification range for essentially the same magnitude of focus potential applied to the focus electrode, whereby the tube does not require refocusing upon shifting from one end of the magnification scale to the other.

3,801,850

GETTER-CONTAINING ELECTRIC DISCHARGE DEVICES

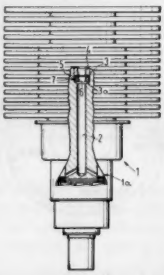
Heinz Maegdefessel, Haslach, and Hari Singh Verma, Krailling, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 2, 1972, Ser. No. 303,106

Claims priority, application Germany, Nov. 10, 1971, 2155875

Int. Cl. H01p *19/70*

U.S. Cl. 313—174 **5 Claims**



An open-ended non-vaporizable getter element is secured to an anode axial bore of a disk-seal electric discharge tube with a sleeve-like tubing seal. The getter element comprises an open-ended container, as of molybdenum, filled with a sintered highly porous mixture of at least 70 percent by weight of zirconium and up to 30 percent by weight of carbon. The getter element is soldered to the bore walls and to the tubing seal during initial assembly of the discharge tube.

3,801,851

PLASMA DISPLAY PANEL

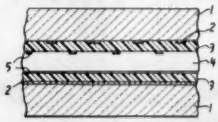
Shizuo Andoh; Toshinori Urade, both of Kobe, and Tadatsugu Hirose, Akashi, all of Japan, assignors to Fujitsu Limited, Nakahara-ku, Kawasaki, Japan

Filed Oct. 18, 1972, Ser. No. 298,530

Claims priority, application Japan, Oct. 18, 1971, 46-82300

Int. Cl. H01j *61/30*

U.S. Cl. 313—220 **8 Claims**



A plasma display panel in which two transparent base plates are assembled together to define a discharge gas space therebetween. On each transparent base plate, a plurality of strip-like main electrodes are provided and a dielectric layer is formed to cover them and, further, third electrodes are each provided between adjacent ones of the main electrodes. The two transparent base plates are assembled together in opposing relation to each other in such a manner that their main electrodes and third electrodes are disposed substantially per-

pendicuar to each other in the form of a matrix. By impressing a voltage to selected ones of the main electrodes of the both transparent base plates, a discharge spot is produced at their intersecting point to provide a display. The discharge spot becomes enlarged or reduced or extends in a certain direction according to the polarity of a voltage impressed between the third electrodes of both transparent base plates and to the selection of the third electrodes to be supplied with the voltage. The discharge spot can be shifted in either direction of the row and column of the matrix.

3,801,852

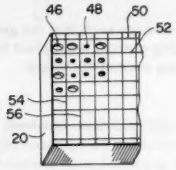
PICTURE PRODUCING PLASMA DISPLAY DEVICE AND METHOD OF MAKING IT

John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 26, 1972, Ser. No. 318,369

Int. Cl. H01j *61/30*

U.S. Cl. 313—220 **16 Claims**



A plasma display device capable of selectively displaying several fixed, picture-type images which may extend over the entire display area of the device. The device includes a cavity plate having cavity location areas arranged thereon in parallel rows and columns in a grid-like manner. Cavities associated with each of the fixed images are regularly located at periodically spaced rows and columns of the cavity location areas, and horizontally positioned and vertically positioned electrodes, aligned with the cavities, are used to energize the device. Each image to be displayed is produced by first making a half-tone transparency film of a picture to be displayed. The transparency film has "data dots" thereon, and these "-dots" are then used in forming the cavities associated with each image.

3,801,853

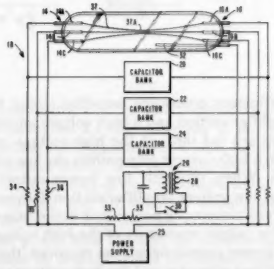
DISCHARGE TUBE APPARATUS

Gabriel M. Giannini, 79-811 Avenue 54, Indio, Calif.

Continuation-in-part of Ser. No. 234,035, March 13, 1972, which is a division of Ser. No. 828,526, May 28, 1969, Pat. No. 3,651,366. This application Oct. 6, 1972, Ser. No. 295,568

Int. Cl. H01j *61/80, 61/92;* **H05b** *41/00*

U.S. Cl. 313—267 **13 Claims**



Electrically parallel discharges induced within a flash tube containing an inert gas at low pressure provide a compact source of radiation suitable for optical purposes. The discharges result from potential differences established between pairs of an array of three or more electrode pairs contained within the tube and arranged substantially symmetrically about a central axis. The electrode pairs are energizable independently of one another. Because of the magnetic forces between the discharges and the symmetry of the electrodes, the discharges are attracted to one another and form a substantially stable plasma which does not contact the tube walls and comprises a compact radiation source.

3,801,854

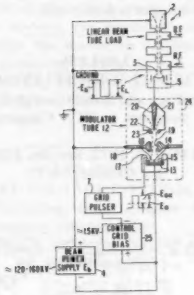
MODULATOR CIRCUIT FOR HIGH POWER LINEAR BEAM TUBE

Robert Henry Giebeler, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 24, 1972, Ser. No. 283,433

Int. Cl. H01j *25/12, 25/16*

U.S. Cl. 315—5.29 **5 Claims**



A high power linear beam tube; to be modulated, such as a high-power klystron, has its cathode directly connected with the depressed collector electrode of a modulator tetrode tube and its anode connected to the accelerating electrode of the tetrode modulator tube. The modulator tetrode tube includes a gridded convergent flow linear beam electron gun and a mirror image, substantially 100 percent depressed collector. The control grid is non-intercepting grid with and provides a voltage gain of 20 to 50 and a relatively high-power gain, as of 20 to 40 db. The electron gun includes a massive non-intercepting accelerating anode disposed between the control grid and the depressed collector. When the beam traverses the accelerating anode to the depressed collector, the collector is lowered toward cathode potential, causing an equivalent current to flow in the thermionic diode load. The beam perveance of the load tube is preferably substantially equal to the perveance of the electron gun of the tetrode modulator tube.

3,801,855

TELEVISION CAMERA TUBE

Hans Georg Gerlach, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,622

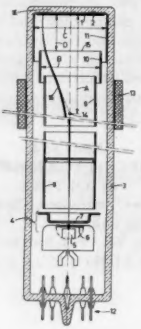
Claims priority, application Netherlands, Nov. 6, 1971, 7115320

Int. Cl. H01j *29/56*

U.S. Cl. 315—14 **2 Claims**

A television camera tube (vidicon) having a collimation lens for directing the deflected electron beam at right angles

to the photoconductive layer. The collimation lens comprises no gauze-shaped electrode. A special configuration is described which results in small lens aberrations and a small



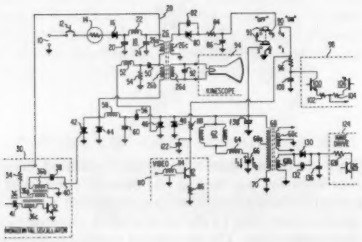
landing error together with a large field strength at the surface of the photoconductive layer. The configuration is also such that the so-called ion spot is prevented.

3,801,856

INSTANT-ON CIRCUIT FOR A TELEVISION RECEIVER

Dal Frank Griepentrog, and Robert Joseph Gries, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 10, 1972, Ser. No. 252,314
Int. Cl. H01j *29/70*
U.S. Cl. 315—20 **7 Claims**



The instant-on circuit cooperates with a horizontal deflection system of the type utilizing two bi-directionally conductive switching means which serve respectively as trace and commutating switches. When the on-off control for the television receiver is turned to its "ON" position, the two switches cooperate to provide those direct potentials needed for image reproduction on the face of a picture tube kinescope. When the control is turned to its "OFF" position, on the other hand, the trace switch is inactivated, but the commutating switch continues to operate to provide a reduced filament voltage for the picture tube.

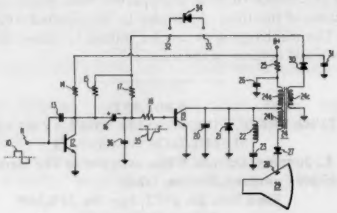
3,801,857

TELEVISION DEFLECTOR CIRCUIT WITH TRANSFORMERLESS COUPLING BETWEEN THE DRIVER AND OUTPUT STAGE

David Warren Luz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed July 27, 1972, Ser. No. 275,640
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **8 Claims**

A transformerless coupled driver-to-output stage deflection circuit in which initial driver stage operating current is obtained from a relatively high voltage receiver power supply to initiate operation of the deflection circuit. A relatively low voltage supply is derived from the deflection output stage and



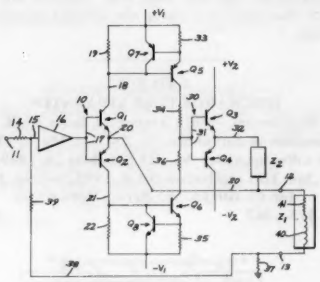
coupled to the driver stage such that the greater portion of the driver stage operating current is supplied by the relatively low voltage supply during normal operation.

3,801,858

DIRECT DRAW AMPLIFIER FOR MAGNETIC DEFLECTION CATHODE RAY TUBES

Orrin H. Grangaard, and Ernest R. Peake, both of St. Paul, Minn., assignors to Environmental Research Corporation, St. Paul, Minn.

Filed Oct. 10, 1972, Ser. No. 296,161
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **10 Claims**



A high efficiency composite amplifier circuit having a low voltage amplifier section and a high voltage amplifier section. Input signals are fed through the high voltage amplifier and also through a high current gain path to the low voltage amplifier section. When relatively low power output signals are required, the low voltage amplifier section delivers the needed power, thereby conserving power that would otherwise be dissipated in the output transistors of the high voltage amplifier. When high power output signals are required, the low voltage amplifier section saturates and the high voltage amplifier section automatically supplies the additional required power output. An inner loop and an optional outer loop feedback may be used to smooth the output signal.

3,801,859

MICROWAVE GAS DISCHARGE SWITCHING TUBES

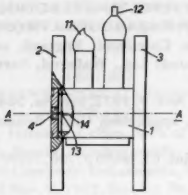
John Arthur Broadhead, Lincoln, England, assignor to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Sept. 5, 1972, Ser. No. 286,349

Claims priority, application Great Britain, Sept. 10, 1971, 42266/71

Int. Cl. H01p 1/14

U.S. Cl. 315—39 11 Claims



A microwave gas discharge switching tube is provided with a conductive wire grid mounted on the inside of its input window to shorten the recovery time following the termination of a heavily ionised gas discharge within the tube. The tube may additionally contain water vapour in known manner to further reduce the recovery time.

3,801,860

FAIL-SAFE LAMP FILAMENT MONITORING CIRCUIT

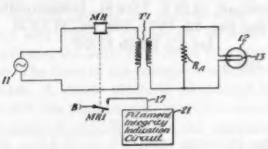
Kenneth Gordon King, London, England, assignor to The Westinghouse Brake and Signal Company, Limited, London, England

Division of Ser. No. 69,765, Sept. 4, 1970, Pat. No. 3,725,728. This application Sept. 22, 1972, Ser. No. 291,230

Claims priority, application Great Britain, Sept. 23, 1969, 46903/69

Int. Cl. H01j 7/42; H05b 37/03; G08b 21/00

U.S. Cl. 315—136 5 Claims



This invention relates to a fail-safe lamp filament monitoring circuit including an a.c. signal source to provide an a.c. signal to the primary of a transformer which, in turn, supplies alternating electrical energy to a lamp filament connected in its secondary, a monitoring device responsive to the current in the primary winding and an auxiliary loading device connected in the secondary. The auxiliary loading device is effective to increase power flow through the transformer to energize the filament to a level where the monitoring device is operated and held operated until the lamp filament is no longer energized at which time the monitoring device is released at the transformer magnetizing current.

3,801,861

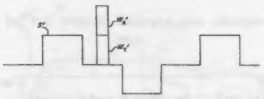
DRIVE WAVEFORM FOR GAS DISCHARGE DISPLAY/MEMORY PANEL

William D. Petty, Perrysburgh, and David E. Liddle, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 12, 1971, Ser. No. 188,481

Int. Cl. H05b 39/00

U.S. Cl. 315—169 TV 10 Claims



There is disclosed a gas discharge display/memory panel which has opposing electrode arrays with insulating dielectric charge storage members, the arrays being oriented so as to define a plurality of discharge units or cells, the panel being operated by the application of a sustaining voltage, the writing of a particular unit being effected by the application of a writing voltage to one electrode of the unit and a similar writing voltage to the opposing electrode of the unit, the two writing voltages being algebraically added across the unit from a near zero slope base or plateau, the amplitude of the base being substantially less than the maximum amplitude achieved by the total applied sustaining voltage in one period, and the magnitude of the writing voltage applied to either opposing electrode alone being insufficient to write any unit in the panel.

3,801,862

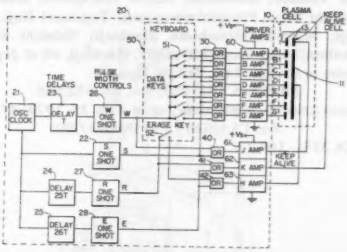
PLASMA CELL VOLTAGE CONTROL CIRCUIT

Robert R. Skutt, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 6, 1972, Ser. No. 303,834

Int. Cl. H05b 41/16

U.S. Cl. 315—169 TV 7 Claims



The present circuit controls the width of the voltage pulses applied to a plasma cell to control the amount of wall charge that builds within the cell. By controlling the level of the wall charge it is possible to control the occurrence of the discharge within the cell.

3,801,863

SELF-REGULATED DRIVE APPARATUS FOR DISPLAY SYSTEMS

James Y. Lee, New Brunswick, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 16, 1972, Ser. No. 306,993

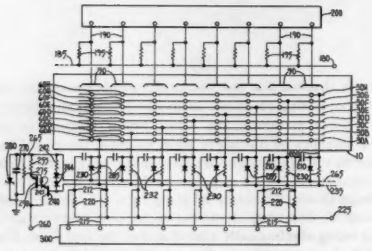
Int. Cl. H05b 43/00

U.S. Cl. 315—169 TV 9 Claims

Apparatus addressing multi-position display devices directly from semiconductor integrated circuits and driving the display

electrodes via passive coupling without exceeding the limitation on voltage excursions for the outputs of such circuits. The apparatus develops and applied to threshold-responsive display devices, including gas discharge display tubes or panels, only the amount of bias that is needed for operation of the device by the signal potentials that are available. Bias potential for the display electrodes is accumulated in steps until the device fires, and then is automatically adjusted each cycle in relation to the number of display electrodes that are being operated.

The input signals are applied to one set of electrodes



through coupling capacitors which are charged from a common bias capacitance during blanking intervals between the input pulses and are at least partially discharged during operation of the device. The bias potential for those electrodes is developed across the common capacitance by a regulator passively coupled to the cathodes by series feedback resistors which add charge to the bias capacitance in accordance with the number of cathodes that are being driven. In equilibrium, the common capacitance is charged as much during the cathode input pulses as the coupling capacitors are discharged in toto during conduction of the device.

3,801,864

DISPLAY DEVICE

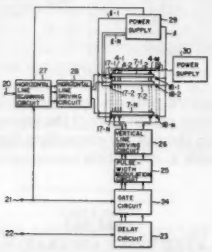
Mikiya Yamane, Kunitachi; Seiichi Murayama, Kokubunji; Tsuyoshi Seko, Musashimurayama; Tetsunori Kaji, Kokubunji; Masashi Mizushima, Hachioji; Shinichi Shinada, Kokubunji, and Tsune Miyashita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,545

Claims priority, application Japan, Feb. 25, 1972, 47-18946

Int. Cl. H04n *3/16*; **H05b** *37/00*

U.S. Cl. 315—169 TV **1 Claim**



A display device comprising means for forming a discharge space including a plurality of discharge electrodes constituting an electron source, a plurality of first control grids arranged in parallel for controlling the electron beam generated from the discharge space, a plurality of second control grids arranged in parallel with each other and at right angles to said first control grids, means for accelerating the electron beam controlled by said first and second control grids, a phosphor illuminated by the impingement thereupon of the accelerated electron beam, means for applying to said second control grids pulse voltages in sequence, means for applying a pulse voltage to said discharge electrodes to effect a discharge only in the space corresponding to the control grid to which the pulse voltage is applied, and means for applying a pulse-width-modulated voltage to said first control grids.

3,801,865

SYSTEM FOR SUPPLYING ELECTRIC POWER TO LOADS IN HAZARDOUS ATMOSPHERES

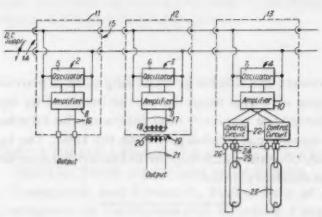
Frank B. Roberts, Gateshead, England, assignor to Victor Products (Wallsend) Ltd., Wallsend, Northumberland, England

Filed Nov. 9, 1972, Ser. No. 304,896

Claims priority, application Great Britain, Nov. 18, 1971, 53634/71

Int. Cl. H05b *37/00, 39/00*

U.S. Cl. 315—187 **9 Claims**



In a power supply system for use in hazardous conditions, such as in mines, an inverter housed within a flame-proof enclosure is connected to a d.c. supply line and generates an a.c. output around the lower end of the kiloHertz range, e.g. up to approximately 100 kHz. The output may be connected to a load, such as a fluorescent lamp, either directly, or through a connector comprising a transformer having separable primary and secondary windings, or via a control circuit which provides an intrinsically safe supply.

3,801,866

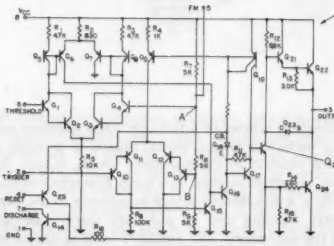
FLASHING NOVELTY DEVICE

Phillip L. Schmidgall, 1820 E. 75th St., Indianapolis, Ind.

Filed Dec. 11, 1972, Ser. No. 313,926

Int. Cl. H05b *33/00*

U.S. Cl. 315—200 A **4 Claims**



A two-function oscillator comprising an integrated circuit device and a plurality of circuit components externally connected to the device. The circuit device provides an output

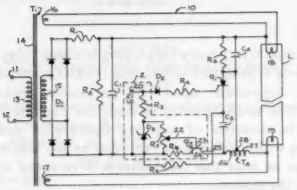
terminal and a voltage-level responsive circuit therewithin for changing the state of the voltage on the output terminal from a level approximately equal to the applied voltage to a second level approximately equal to ground level. A first load circuit is placed between the said output terminal and ground to be energized when the voltage on the output terminal is approximately equal to the applied voltage and a second load circuit is connected between the output terminal and the terminal to which the voltage is applied to be energized when the said output terminal is approximately at ground level. An externally connected capacitor is discharged through the integrated circuit device as it changes state, and it is the voltage-level on the capacitor which causes the voltage on the said output terminal to switch from the applied voltage level to ground level.

3,801,867

DIRECT CURRENT ENERGIZATION OF GASEOUS DISCHARGE

Thomas G. West; James R. Collins, both of Fort Wayne, Ind., and Thomas J. Broski, Hendersonville, N.C., assignors to General Electric Company, Indianapolis, Ind.

Filed Nov. 1, 1972, Ser. No. 302,793
Int. Cl. H05b *37/02*
U.S. Cl. 315—241 R **15 Claims**



There is provided a solid-state circuit for starting and regulating a gaseous discharge lamp which is operated by direct current. An input transformer connected to a full wave rectifier and smoothing filter provides direct current for lamp operation. A series arrangement including a controlled rectifier (SCR) and a capacitor is connected across this DC power supply and the lamp. A charge path is provided for the capacitor through a pair of resistors and an autotransformer primary winding. A separate actuation means is provided to gate on the SCR. When the SCR is gated on the capacitor discharges back through the primary winding inducing a voltage in a secondary winding causing the lamp to start. A transistor has its collector and emitter connected in series with the DC power supply and the lamp to provide regulation or ballasting of the lamp. The base of the transistor is connected to the actuation means. A Zener diode is connected in a circuit arrangement with the transistor to provide a constant voltage. A variable resistor is connected to the transistor and to the Zener diode and utilizes a portion of this constant voltage to bias the base-emitter junction of the transistor.

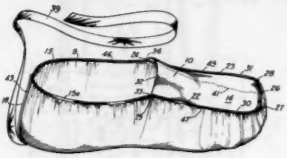
3,801,868

DISPOSABLE PROTECTIVE SHOE COVER

Joe E. Bryant, 2283 Saratoga Dr., Decatur, Ga.

Filed Mar. 6, 1972, Ser. No. 231,911
Int. Cl. A43b *3/14, 3/16;* **A61n** *1/14*
U.S. Cl. 317—2 B **1 Claim**

A disposable protective shoe cover formed of flexible foldable fabric material which has been treated to make it electrically conducting on the outside and water repellent on the inside. The shoe cover is formed from a symmetrical unitary blank having a longitudinal axis, along which is stitched a strip of electrically conducting tape which is adapted to be grounded to the wearer by being placed in physical contact with his leg. The blank from which the shoe cover is made forms a moccasin provided, along its upper surface, with longitudinal elastomeric strips so that they will gather the sole of the cover around the toe of the shoe and hence fit substantially any length of shoe or foot. By such an arrangement, the bottom or sole of the cover is urged to a flattened condition.



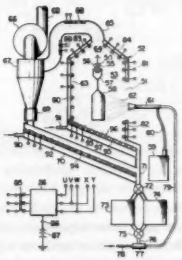
With the tape installed, the shoe cover is particularly useful in an operating room for arresting the generation of static electricity and for maintaining the shoe or foot of the wearer in a sterile condition. When the tape is not installed, the shoe cover is non-conductive but can be used as a sterile shoe cover in other places.

3,801,869

BOOTH FOR ELECTROSTATIC POWDER PAINTING WITH CONTACT TYPE ELECTRIC FIELD CURTAIN

Senichi Masuda, 40-10-605, 1-chome, Nishigahara, Kita-ku, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 292,160
Claims priority, application Japan, Oct. 6, 1971, 46-78470
Int. Cl. B08b *7/00*
U.S. Cl. 317—3 **4 Claims**

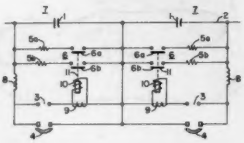


A booth in which electrically charged particulate material is sprayed onto a workpiece having an opposite charge, so that the particles are electrostatically attracted to the workpiece, has all of its walls that confront the workpiece made of electrical insulating material. A grid-like arrangement of parallel, spaced apart electrodes, insulated from each other, extends across the entire area of every wall, parallel to a surface of the wall and in intimate juxtaposition thereto. Each electrode is connected with one terminal of an alternating high voltage source, every electrode with a different terminal than each of the electrodes laterally adjacent to it, to produce a constantly varying field that electrodynamically repels particles from the wall.

3,801,870
TRANSIENT VOLTAGE LIMITER FOR SERIES CAPACITORS

Louis C. Grove, Jr.; John E. Harder; Richard D. Kennon, and James N. Santilli, all of Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,490
Int. Cl. H02h *9/06*
U.S. Cl. 317—12 A **10 Claims**

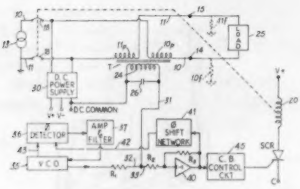


A series capacitor installation having means for limiting transient voltages occurring upon reinsertion of the capacitor in the line after it has been bypassed by its protective equipment. For this purpose a resistor is placed in parallel with the capacitor during reinsertion, and means are provided for connecting the resistor in the circuit immediately upon bypassing the capacitor and for disconnecting the resistor at a predetermined time after the bypass has been removed.

3,801,871
GFI CIRCUIT HAVING TUNED CIRCUIT FAULT DETECTOR

Huai-Kuang Loh, Tantallon Hills, Md., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,791
Int. Cl. H02h *1/02*
U.S. Cl. 317—18 D **15 Claims**

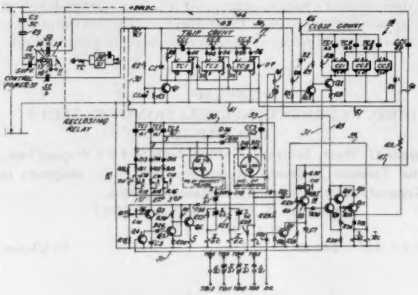


A ground fault current interrupter circuit for detecting a ground fault on a hot conductor and on a grounded neutral conductor of a power line. A transformer has two balanced multi-turn windings respectively series connected in the two conductors and has a third multi-turn winding excited by an oscillator whose frequency is much higher than the frequency of the power line source. The third winding is connected in a tuned circuit whose change of output signal is sensed to control circuit breaker means in the power line conductors. In the absence of a fault on either line, the two windings in the conductors reflect a balanced, substantially infinite impedance in parallel with the tuned circuit and the signal therein is maximum. A fault on one of the conductors reflects back as a lower impedance to the tuned circuit and the signal therein is reduced in magnitude. The change in signal level is sensed to actuate a circuit breaker. Means are provided to assure that the oscillator frequency and resonant frequency of the tuned circuit are substantially equal, thereby to cancel out the effect of reactive loading on the power line.

3,801,872
MULTI-SHOT RECLOSING RELAY HAVING MEANS FOR REMEMBERING TRIP AND RECLOSURE STATUS IN THE EVENT OF LOSS OF POWER

Stanley E. Zocholl, Holland, and Pedro Farinas, Cornwells Heights, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Feb. 27, 1973, Ser. No. 336,334
Int. Cl. H02h *3/06*
U.S. Cl. 317—22 **14 Claims**



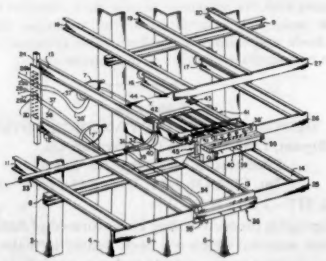
An automatic reclosure employing latching relay structures. The recloser is designed to trip and reclose a selected number of times, dependent upon the particular preset program selected. The latching relay devices are capable of "remembering" the number of tripping operations and reclosure operations which have occurred prior to any loss in power for the system so that this information is retained when power returns to the system.

The automatic reclosure circuitry prevents successive tripping operations from being performed in the absence of intervening reclosure operations and vice versa. In addition thereto, the circuitry is responsive to the state of the circuit breaker being controlled by the recloser system and not to the state of the control power.

3,801,873
MAIN DISTRIBUTION FRAME-MOUNTED CENTRAL OFFICE SUBSCRIBER CARRIER CHANNEL UNIT SHELF

Gene L. Stumpf, Belmont, and Donald G. Tweed, Mountain View, both of Calif., assignors to GTE Lenkurt Incorporated, San Carlos, Calif.

Filed Oct. 4, 1972, Ser. No. 295,055
Int. Cl. H02b *1/04*
U.S. Cl. 317—99 **29 Claims**



This shelf is set inside a main distribution frame (MDF) between horizontal crossbars thereof. The shelf is supported by a pair of flanges that project from the top thereof and rest on adjacent horizontal crossbars. The flanges are offset from

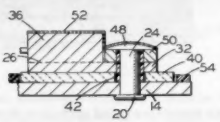
each other so that identical shelves can be mounted side-by-side in adjacent openings between crossbars of the MDF. The top of the shelf is shaped to form a neck section that hangs over the horizontal mounting bar on the front of the MDF for supporting the shelf and a vertical faceplate. Several compartments are formed inside the shelf by longitudinal ribs. Pairs of vertically aligned open-sided and closed-sided retainer sockets in each compartment are attached to the top and bottom inside walls of the shelf at the back thereof. Each pair of sockets receives mounting tabs on a printed-circuit card connector that is held in place by a flexible retainer arm which snaps into a locking position when the connector tabs are forced into the sockets. A major portion of the bottom of the shelf is open at the front thereof for loading individual subscriber carrier channel units into the compartments. Each channel unit includes openings in the back and top front thereof and a printed circuit card that plugs into an associated connector at the back of the shelf. Openings in the back of the shelf and the bottom and top thereof near the neck section form a chimney that draws air through and cools the channel units. Grooves are provided adjacent the openings in the top wall of each compartment for snap-locking the channel units into the shelf. Wires from the connectors are ducted through cable troughs on the side of the shelf to the front thereof. In a preferred embodiment of the invention, a line terminal block is connected to the faceplate so that it is aligned with a horizontal mounting bar when the shelf is set in an MDF.

3,801,874

ISOLATION MOUNTING FOR SEMICONDUCTOR DEVICE

Joseph P. Stefani, Warwick, R.I., assignor to General Electric Company, Providence, R.I.

Filed Oct. 30, 1972, Ser. No. 301,849
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 **8 Claims**



An isolation mounting for a semiconductor device includes a metal heat sink plate to receive heat from the semiconductor device and insulating means to electrically isolate the semiconductor device from the plate which receives the heat. A metal fastener presses the semiconductor device against an insulating wafer which is in turn pressed against the heat sink plate. An insulating liner separates the fastener electrically from metal of the semiconductor device.

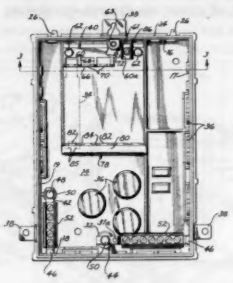
3,801,875

NON-METALLIC LOAD CENTER WITH IMPROVED BUS BAR CONSTRUCTION

John Alfred Morby, Bristol, and James Edward McGann, Forestville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed June 14, 1973, Ser. No. 369,867
Int. Cl. H02b *1/04, 1/20*
U.S. Cl. 317—120 **8 Claims**

A non-metallic load center comprises an insulative, molded plastic enclosure consisting of a housing having integrally formed back and sidewalls and a separable cover. An elongated bus bar having first and second strip portions interconnected by spaced L-shaped ribs is secured adjacent its ends to integrally formed mounting posts. Bus bar contacts extend into each gap between adjacent ribs to facilitate electrical contacting engagement with individual circuit breakers, while the ribs afford lateral stability to the individual circuit breaker installations. Integrally formed pedestals afford bus bar support intermediate its ends and also serve to support and locate a connector lug carried by the bus bar.

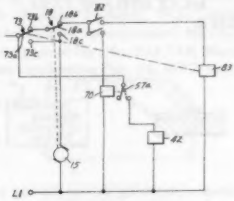


3,801,876

VENDING MACHINE APPARATUS

Joseph A. Lotspeich, St. Paul, Minn., assignor to Gross-Given Manufacturing Co., St. Paul, Minn.

Filed May 17, 1972, Ser. No. 253,991
Int. Cl. H01h *47/00*
U.S. Cl. 317—157 **5 Claims**



A vending machine of the type having a selection carriage movable between front and rear stacks each containing several vertically extending columns of a merchandiseable commodity (e.g. different brands of cigarettes). The shifting mechanism for controlling the movement of the selection carriage is spring biased so that the carriage is normally driven by a single direction motor toward the rear stack. Upon actuation of a selector button for one of the brands of merchandise in a front column, a reversing relay is actuated energizing a solenoid and thereby setting the shifting mechanism so that the selection carriage is driven toward the front stack.

3,801,877

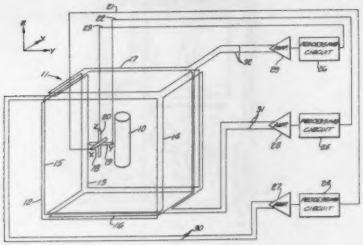
APPARATUS FOR PRODUCING A REGION FREE FROM INTERFERING MAGNETIC FIELDS

Alfons Griese, Rommelsbach; Alfons A. Kalisch, and Hans G. Luz, both of Reutlingen, all of Germany, assignors to Institut Dr. Friedrich Forster, Prufgeratebau, Reutlingen, Germany

Filed Sept. 15, 1972, Ser. No. 289,257
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **11 Claims**

Magnetic field generating coils are arranged at opposite sides of a region to be made free of interference magnetic

fields along each of the three coordinate axes. A set of field sensing probes or transducers are also provided along the respective axes with compensation coils to prevent interaction with the field generating coils arranged along the other axes. As a further aspect, undesired interaction of the probes with control circuits of other equipment or devices being used in



the region free from interference fields is suppressed by installing at each of the probe locations one or more compensating coils for nullifying the effect of these fields on the probes. Optionally, control amplifiers may be manually adjusted to compensate for fixed fields generated by other equipment being used in the region.

3,801,878

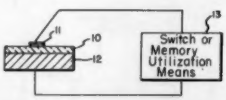
GLASS SWITCHING DEVICE USING AN ION IMPERMEABLE GLASS ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Filed Mar. 9, 1971, Ser. No. 122,302

Int. Cl. H01L 3/00, 11/14

U.S. Cl. 317—234 R **11 Claims**



A glass electronic switching device having improved long-term reliability comprises a thin layer of an ion impermeable glass disposed between a pair of electrical contacts. Preferably the glass is an insulating glass having a thermal coefficient of expansion compatible with typical crystalline semiconductors, and the glass layer typically has a thickness of less than about five microns. These glass switches can be readily incorporated into high-density integrated circuits using planar techniques. When sufficiently thin glass layers are used, the same glass layer which comprises the active layer of the switching device can also comprise a masking layer to facilitate the fabrication of conventional diffused junction devices, a dielectric layer for the fabrication of surface effect devices, and a passivating layer to protect an underlying crystalline semiconductor substrate.

3,801,879

JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

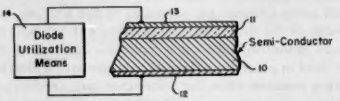
Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 227,933

Int. Cl. H01L 3/00

U.S. Cl. 317—234 R **15 Claims**

A semiconductive junction device comprises a thin layer of a glassy amorphous material exhibiting one type of conductivity (either N or P) disposed upon a semiconductive substrate possessing the other kind of conductivity. The glassy layer is sufficiently thin that it exhibits a useful level of conductivity.



Preferably, the glassy layer is ion impermeable so that the device remains stable under a wide range of operating conditions. These junctions behave as diodes and can be incorporated in a wide variety of complex semiconductive devices.

3,801,880

MULTILAYER INTERCONNECTED STRUCTURE FOR SEMICONDUCTOR INTEGRATED CIRCUIT AND PROCESS FOR MANUFACTURING THE SAME

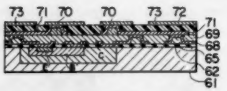
Seiki Harada, Hachioji; Saburo Nonogaki, Meguro; Yoichi Oba, Hachioji; Atsushi Saiki, Tokyo; Takahiro Okabe; Takahiro Kohashi, both of Hachioji, and Kikuji Sato, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,794

Claims priority, application Japan, Sept. 9, 1971, 46-69215

Int. Cl. H01L 5/02

U.S. Cl. 317—234 R **24 Claims**



A multilayer interconnected structure is composed of a first patterned layer formed on a semiconductor substrate, through an SiO_2 film where necessary, lands, trapezoidal in cross section, which are formed on the first patterned layer to connect the latter to another patterned layer to be formed thereon, a thermosetting polymer layer applied on the first layer to a thickness up to the surface of the trapezoidal lands, and a second patterned layer spread over the resin layer and electrically connected to the trapezoidal lands. By this fabrication technique a multilayer interconnected structure is obtained which has a minimum of steps in its individual patterned layers and possesses desirable inter-layer insulation characteristics.

3,801,881

PACKAGED SEMICONDUCTOR DEVICE INCLUDING A HOUSING IN THE FORM OF A RECTANGULAR PARALLELEPIPED AND CERAMIC RECTANGULAR BASE MEMBER

Shinzo Anazawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

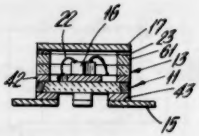
Filed Oct. 24, 1972, Ser. No. 299,855

Int. Cl. H01L 3/00, 5/00

U.S. Cl. 317—234 R **7 Claims**

A packaged semiconductor device comprises a housing having a ceramic base member in the form of a rectangle. The base member includes a ceramic sheet having rectangular regions orthogonally contiguous to one another corresponding to the base member rectangle. A plurality of first conductors and a substantially equal number of second conductors are

metallized on the ceramic sheet. Each first conductor has an area at the substantial center of each rectangular region and an arm extending from that area parallel to one of the common diagonals of the region into a contiguous region and substantially bisecting the common boundary of the two contiguous regions. Each second conductor extends parallel to a diagonal traversing the one diagonal by a substantially equal amount into two contiguous regions disposed orthogonal to the first-mentioned two contiguous regions and substantially bisecting the common boundary of the last-mentioned two contiguous regions.

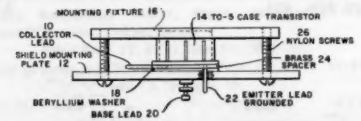


3,801,882

THERMO-ELECTRIC MOUNTING METHOD FOR RF SILICON POWER TRANSISTORS

John L. Ward, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1973, Ser. No. 322,807
Int. Cl. H01 *3/00, 5/00*
U.S. Cl. 317—234 R **2 Claims**



A thermo-electric transistor mounting fixture is provided, using a mounting fixture/heat sink, a beryllium oxide washer, brass spacer, emitter ground pin socket and nylon hold down screws. The mounting fixture provides a design in which the transistor is held in physical contact and alignment with the spacer and insulating washers. Thermal conduction and transfer of heat is accomplished through the application of thermal joint compound between the interfacing surfaces of the washers. The important electrical feature is the elimination of emitter lead length problems by grounding the emitter in the chassis/Faraday shield with the shortest possible lead length with an integral grounding pin. The brass spacer is slotted to allow exiting of the collector lead and facilitating its connection to the collector circuit. The beryllium washer provides required electrical and RF insulation from ground. The combination of the above features provide an effective and efficient high frequency transistor mounting fixture.

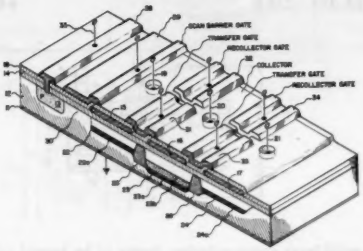
3,801,883

SURFACE CHARGE SIGNAL CORRELATOR

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 2, 1972, Ser. No. 259,262
Int. Cl. H01 *11/14*
U.S. Cl. 317—235 R **14 Claims**

Electrical charges proportional to a sampled value of an analog signal are transferred between surface-adjacent portions of an information channel in a semiconductor substrate. The direction of charge transfer is responsive to control voltages applied to electrodes insulatingly overlying the substrate. A plurality of such information channels connected electrically in parallel to a source of analog signal energy and to output means sensitive to the direction of charge transfer constitute a correlator circuit when additionally some of the control voltages correspond to the bits of a digital reference word with which the analog signal is to be correlated. A portion of electric charge proportional to a sample of the analog signal is gated into each information channel synchronously with each clock pulse as each sequential bit of the digital reference word is applied to control electrodes. Accordingly, the magnitude of signal charge present at a first portion of the information channels is proportional to the correlation of the analog signal with the reference word and the magnitude of signal charge present at a second portion of the information channels is proportional to the correlation of the analog signal with the complement of the reference word.

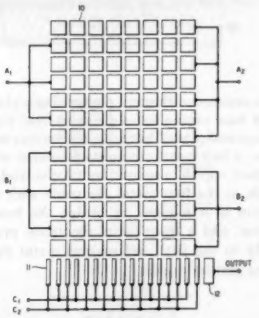


3,801,884

CHARGE TRANSFER IMAGING DEVICES

Carlo Heinrich Sequin, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 235,741, March 17, 1972, abandoned. This application Dec. 18, 1972, Ser. No. 316,105
Int. Cl. H01 *11/14*
U.S. Cl. 317—235 R **13 Claims**



Charge transfer imaging devices are described which perform a psuedo-interlacing operation. A unit cell is provided which in its vertical dimension occupies the space corresponding to two lines in the display. Means are provided for integrating charge under alternate phases of the charge transfer drive mechanism in alternate fields in order to shift the center of charge collection. The device may be in the form of an area imaging device of the frame transfer and store type, or a line imaging device. Both charge coupled and bucket brigade devices may be constructed in accordance with the invention.

3,801,885

MULTI-LAYER SEMI-CONDUCTOR DEVICE TO BE TURNED ON BY A STRESS APPLIED THERETO

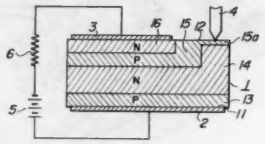
Tatsuya Kamei; Takuzo Ogawa, both of Hitachi; Hiroshi Kodera, Hino, and Yozo Kanda, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 170,594, Aug. 10, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,298

Claims priority, application Japan, Aug. 12, 1970, 45-70057

Int. Cl. H01l *15/00, 11/00*

U.S. Cl. 317—235 R **6 Claims**



A multi-layer semiconductor device to be turned on by a stress applied thereto comprises four contiguous regions of pnpn type, the intermediate p type region being exposed on the side of the exterior n type region and having a greatly reduced thickness in said exposed portion.

3,801,886

VARIABLE RESISTANCE ELEMENT

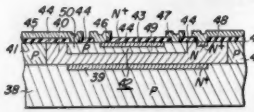
Ichiro Imaizumi, Kokubunji; Kenji Taniguchi, Kodaira, and Atsuo Hotta, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 151,121, June 8, 1971, abandoned. This application June 6, 1973, Ser. No. 367,417

Claims priority, application Japan, June 12, 1970, 45-50257

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R **5 Claims**



A variable resistance element comprising a planar transistor of which the base region has a pinched base region having a high resistance and placed between the emitter region and collector region, a first metal electrode provided at one end portion of the base region, a second metal electrode provided on the same side as the first metal electrode with respect to the emitter region in a manner to bridge the base region and emitter region, and a third metal electrode provided on the opposite side to the first and second metal electrodes with respect to the emitter region.

3,801,887

BRUSHLESS VARIABLE SPEED DRIVE FOR A. C. SYNCHRONOUS MOTOR

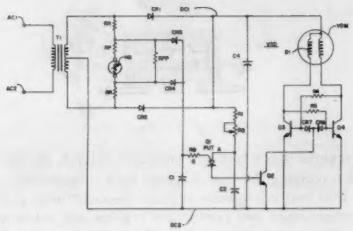
John Joseph Allard, Mishicot, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 10, 1973, Ser. No. 349,689

Int. Cl. H02k *29/02*

U.S. Cl. 318—138 **23 Claims**

A motor speed control circuit is provided for varying the speed of a motor in response to a change in an ambient parameter. An A.C. hysteresis motor is driven from a D. C. supply by a multivibrator. The multivibrator is driven in synchronism with a unijunction relaxation oscillator which oscillates at a variable frequency determined by changes in said ambient parameter. A resistive sensor means is provided in circuit with the relaxation oscillator for detecting changes in the ambient parameter. The resistance of the sensor varies logarithmically with changes in the ambient parameter. The



unijunction oscillator means is provided with means to compensate for the logarithmic change in the sensor, to thereby provide an oscillator frequency which varies linearly with said ambient parameter. Since the speed of the motor is controlled by the frequency of the oscillator, the motor speed is also a linear function of the change in the ambient parameter.

3,801,888

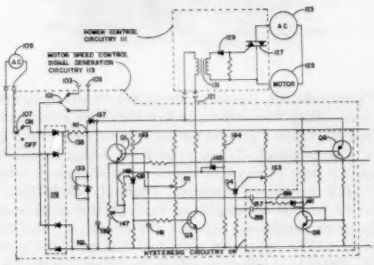
MOTOR SPEED CONTROL CIRCUIT

Harold Faulkner, Garland, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Feb. 9, 1972, Ser. No. 224,715

Int. Cl. H02p *7/58*

U.S. Cl. 318—471 **8 Claims**



Disclosed is a circuit responsive to an environmental parameter such as temperature, humidity, etc. for controlling the speed of a motor. The circuit includes circuitry for causing the motor to turn off at a first value of the environmental parameter and circuitry for causing the motor to turn on again at a second value of the parameter different from the first value by a predetermined amount.

3,801,889

CONTROL FOR WELL PUMP

James L. Quinn, 6143 W. Touhy Ave., Chicago, Ill.

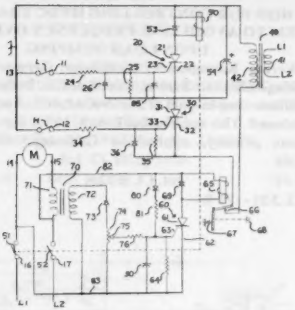
Filed May 10, 1973, Ser. No. 359,102

Int. Cl. G05b *13/00*

U.S. Cl. 318—481 **6 Claims**

A control for turning on and off a motor driving a well pump which includes high pressure and low pressure detectors. The detectors are coupled to the gate circuits of respective silicon controlled detectors, or SCR's, which have their load circuits

connected in a latching loop circuit which energizes a relay to operate the motor. To disable the relay when the pump is sucking air, an auxiliary SCR controls an auxiliary relay having normally closed contacts connected in the loop circuit. The auxiliary SCR is turned on by a source of positive voltage



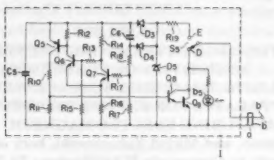
but a current transformer wired in a series with the pump motor sets up a negative control voltage which is of sufficient level under normal current conditions to overpower the positive voltage to maintain the auxiliary SCR turned off. A capacitor connected to the gate insures against premature actuation of the gate by positive inrush voltage.

3,801,890

TIMER DEVICE AND A CAMERA USING SAID DEVICE

Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,780
Claims priority, application Japan, Nov. 25, 1971, 46-94742
Int. Cl. H02p *5/16*
U.S. Cl. 318—484 **8 Claims**



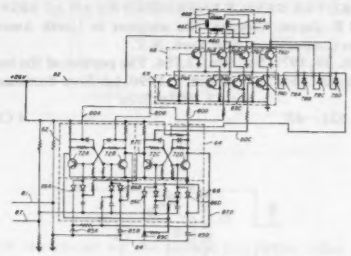
A timer device is arranged for electrical connection to equipment to be controlled, such as a movie camera, including a source of potential, such as a battery in operative association with driving means such as an electric motor. The timing device includes a time constant circuit of the RC type in which the capacitor is charged solely from the battery or the like in the equipment. The equipment is of the type having a pair of remote control terminals controlling a supply circuit connecting the battery and the motor. The timer device has a pair of timer terminals arranged for connection to the remote control terminals, and a switching means, such as a transistor, is connected across the timer terminals so that, when the transistor is conductive, the supply circuit connecting the motor to the battery is closed. When a switch is operated, the capacitor means of the time constant circuit is charged, and the capacitor means discharges through the resistor means of the time constant circuit to apply a control current to the base of the transistor during the time required to discharge the capacitor means.

3,801,891

FOUR PHASE STEPPING MOTOR CONTROL

Raymond A. Davenport, Okemah, Okla., assignor to Oktronics, Inc., Okemah, Okla.

Filed Aug. 30, 1972, Ser. No. 284,723
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **2 Claims**



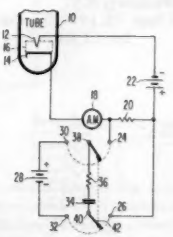
This invention describes an improved system for controlling a stepping motor for use in driving a perforated paper tape in a tape reading apparatus. The motor is provided with eight poles and corresponding coils which are connected in pairs of diametrically opposite coils. These four sets of coils are driven by a power amplifier that is controlled by two flip-flop circuits. Arrangements are made so that successive identical pulses on an input line will switch one flip-flop then the other then the first, and so on. By this means the magnetic flux in a stepping motor is shifted by 45° of rotation by each successive pulse. The motor has a six pole rotor, and as the flux is shifted by 45° in one direction, the rotor rotates 15° in the opposite direction. Thus, on the application of successive pulses on the input, the rotor advances by 15° in a continuing direction.

3,801,892

HEATER-CATHODE INSULATION LEAKAGE TEST METHOD AND APPARATUS

Clarence Austin West, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,003
Int. Cl. G01r *31/22*
U.S. Cl. 324—20 **5 Claims**



A high voltage, short duration pulse is applied between the heater and cathode of an electron tube to cause an electrical breakdown of dielectric material disposed between the heater and cathode when the dielectric material is defective. After the high voltage pulse, a second voltage having a value less than the peak value of the high voltage pulse is applied between the heater and cathode to provide a sustaining current through the dielectric material when, and only when, a

dielectric breakdown has occurred. Current measuring means are disposed between the lower voltage source and either the heater or cathode of the tube to measure the leakage current, if any, that is present during the application of the lower sustaining voltage.

3,801,893

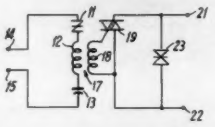
PULSE GENERATOR USING BI-LATERAL SOLID STATE BREAKOVER DEVICE ENERGIZED BY AN AC SIGNAL

Michael F. Joyce, Chicago, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,754. The portion of the term of this patent subsequent to Oct. 2, 1990, has been disclaimed.

Int. Cl. H02m *7/20*

U.S. Cl. 321—43 **4 Claims**



A pulse generator operated directly from an alternating voltage source and including, in series, a bi-lateral negative resistance element, an inductance, and a capacitor. The increasing alternating voltage builds up across the bi-lateral element until the latter reaches its breakover point and transfers a charge to the capacitor. The bi-lateral element then becomes non-conductive again, and voltage again starts to build up across it. This cycle of operation continues as long as the alternating voltage builds up and then reverses as the alternating voltage starts to decrease. The inductance can be a transformer primary winding, and the secondary can actuate a relay contact section or be connected to a rectifier to generate a direct voltage with a much higher ripple frequency than the voltage applied to the series circuit. The generator may also be used to produce an audio or ultrasonic tone by connecting the voice coil of a loudspeaker or an ultrasonic generator as the inductance coil.

3,801,894

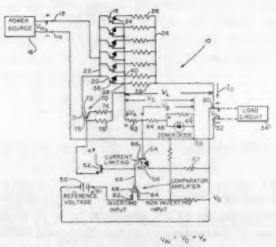
POWER SUPPLY WITH NONLINEAR FOLDBACK CURRENT LIMITER CIRCUIT

Robert M. Spiegel, Pelham, N.Y., assignor to Trygon Electronics, Inc., Westbury, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,261

Int. Cl. G05f *1/56*

U.S. Cl. 323—9 **4 Claims**



A power supply has transistors arranged to pass current from a power source to a load having a variable resistance so that current drawn by the load is variable. The circuit includes a comparator amplifier which compares a reference voltage with output voltage and actuates a bias control transistor for reducing conductance of the transistors when an overload occurs. A nonlinear current foldback means is connected in circuit with the bias control transistor to introduce a non-linear characteristic in the control of bias of the transistors.

3,801,895

METHOD FOR CONTROLLING HVDC TRANSMISSION SYSTEM TO AVOID LINE FREQUENCY OVERVOLTAGE UPON LOAD DUMPING

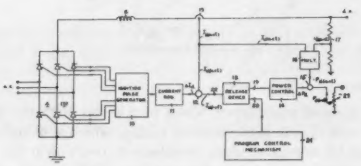
Karl-Werner Kanngiesser, Viernheim, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation-in-part of Ser. No. 62,401, Aug. 10, 1970, abandoned. This application Feb. 9, 1971, Ser. No. 113,828

Claims priority, application Germany, Aug. 28, 1969, 1943646

Int. Cl. H02m *7/00*

U.S. Cl. 321—27 R **2 Claims**



In a high-voltage d-c transmission system in which power fed in from a three-phase a-c network is rectified by thyristor valves into d-c at one station and transmitted as d-c to a receiving station where it is inverted to a-c power by thyristor valves, line-frequency overvoltage stresses on the valves are avoided, in the case of a disturbance of the type in which partial or complete dumping of the load occurs, by progressively controlling back the d-c to a value greater than zero thus to continue absorption of reactive power from the a-c feeding network. The progressive control-back involves a progressive change-over from rectifier to inverter operation by effecting a progressive change in the ignition angle for the valves.

3,801,896

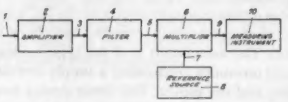
METHOD FOR DETERMINING THE ELECTRICAL RESISTIVITY OF THE SUBSOIL BY ELECTROMAGNETIC SURFACE WAVES AND APPARATUS FOR SUBSOIL PROSPECTING BY MEASURING ELECTROMAGNETIC FIELDS

Jean Duroux, and Michel Zahaczewski, both of Paris, France, assignors to Compagnie D'Applications Et De Diffusion De Techniques Nouvelles, Paris, France

Filed Sept. 21, 1971, Ser. No. 182,392

Int. Cl. G01v *3/12*

U.S. Cl. 324—6 **11 Claims**



This invention relates to an improvement in the method of determining the resistance of the subsoil vertically from a given place by means of an electromagnetic surface wave emitted at a given distance from that place. The signal and the noise received at 1 are amplified and filtered at 2 and 4, while a reference signal with a constant level and the same frequency as the transmission source is transmitted to the analog mul-

uplier 6. The maximum value of the product of the signal and the noise transmitted by 4 to the multiplier 6 and of the reference signal is taken as the proportional value of the signal received and is transmitted to the measurement device 10.

This method makes it possible to lower the frequency for the same transmitter power output and to increase the depth of the prospecting investigation.

3,801,897

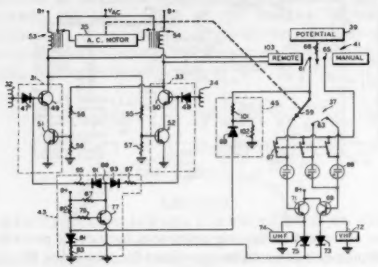
CONTROL CIRCUITRY FOR REMOTE TUNING SYSTEM

Paul Eshelman LeFevre, Pavilion, N.Y., assignor to GTE Sylvannia Incorporated, Seneca Falls, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,828

Int. Cl. H03j *1/00*

U.S. Cl. 334—8 **16 Claims**



In a signal receiver having pushbuttons for tuning individual signal channels, a control circuit for a remote tuning system includes a bi-directional motor coupled to first and second potential development means each responsive to opposite directional rotation signals and to a rotary switching means for selectively coupling a potential source to a selected channel contact in accordance with the selected rotational direction signal. A potential sustaining means couples the rotary switching means to the first and second potential development means and insures continued rotation of the rotary switching means intermediate the signal channel contacts.

3,801,898

DC BUS RESISTIVE PATH TO GROUND FAULT DETECTOR

John A. Young, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

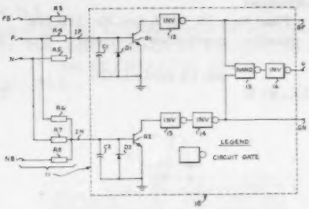
Filed Mar. 22, 1972, Ser. No. 236,940

Claims priority, application Canada, June 16, 1971, 115747

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **6 Claims**

A detector for indicating a resistive path to ground fault on either bus of a pair of ungrounded DC buses conducting electric power to a load. The detector includes one gate circuit for each bus. A positive DC bias signal applied to the gate circuit for the positive bus maintains this circuit in one mode of operation during the absence of a fault on either bus; a negative DC bias signal applied to the gate circuit for the negative bus maintains this circuit in a second mode of operation during the absence of a fault on either bus. The voltages on the buses are compared in a simple resistor network. Whenever these voltages become imbalanced because of a resistive path to ground fault on either bus, a signal from the network, proportional to the imbalance and applied to the gate circuits, will



switch the circuit for the faulted bus to the other mode of operation. This switching is annunciated to indicate a fault occurrence as well as the faulted bus.

3,801,899

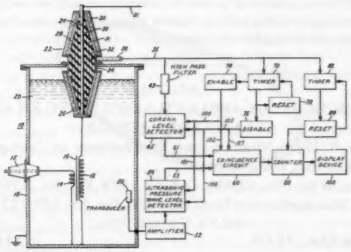
MEANS FOR DETECTING THE INCEPTION OF CORONA DISCHARGES WITHIN INDUCTION APPARATUS

Tseng W. Liao, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 26, 1973, Ser. No. 345,176

Int. Cl. G01r *31/08, 31/12, 31/06*

U.S. Cl. 324—52 **10 Claims**

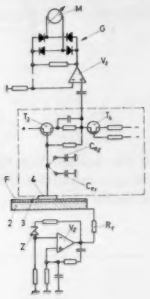


Corona-detecting means detects the inception of corona discharges within liquid-insulated induction apparatus connected in a power circuit. The corona-detecting means comprises: (a) corona-level detector means for developing a first signal pulse in response to the presence on the power circuit of corona-produced, radio-frequency voltage exceeding a predetermined amplitude, (b) a pressure wave detector for developing a second signal pulse in response to the development of ultrasonic pressure waves in said liquid exceeding a predetermined amplitude, and (c) a coincidence circuit for developing an output signal in response to receipt of both said first and second signal pulses during any one of predetermined monitoring periods, each having a duration less than about 360 degrees of power frequency voltage.

3,801,900
MEASURING SYSTEM FOR NON-DESTRUCTIVE THICKNESS MEASUREMENT OF ELECTRICALLY NON-CONDUCTIVE COATINGS ON ELECTRICALLY CONDUCTIVE BODIES

Imre Szasz, Dicken, Switzerland, assignor to Paratronic AG, Zug, Switzerland

Filed Nov. 28, 1972, Ser. No. 310,106
Claims priority, application Germany, Dec. 8, 1971, 2160963
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **17 Claims**

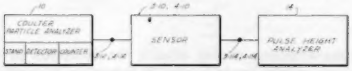


A measuring device for non-destructive thickness measurement of a dielectric coating on an electrically conductive body comprises a conductive probe plate adapted to be applied to the surface of the dielectric coating; a high frequency voltage generator connected to either the probe plate or the conductive body for supplying a high frequency signal thereto; a reference capacitor having known capacitance connected to the probe plate or the conductive body, whichever is not connected to the high frequency voltage generator; a measuring device connected across the reference capacitor for measuring the voltage drop across the reference capacitor; and a display device connected to the measuring device for displaying the measured voltage drop, which directly indicates the layer thickness of the dielectric coating.

3,801,901
PARTICLE STUDY APPARATUS INCLUDING AN AXIAL TRAJECTORY SENSOR

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 84,440, Oct. 27, 1970, Pat. No. 3,701,029. This application Sept. 11, 1972, Ser. No. 288,127
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **14 Claims**

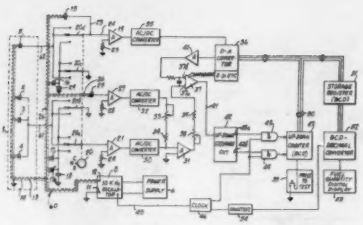


A sensor used with apparatus operating in accordance with the principles of the Coulter electronic particle studying device, for differentiating between pulses produced by particles passing on axial or nearly axial paths through an aperture and particles passing off center. The pulse duration is measured at some fraction of the individual pulse amplitudes and only those which meet the criteria of duration established by the electronic circuitry are permitted to pass for use in pulse height analysis apparatus following the sensor. The other pulses are discarded on the basis of their greater durations. The apparatus of the invention provides structure for deriving a duration-measuring pulse whose duration is that of the particle pulse at its fractional amplitude, converting the signal into one which has an amplitude proportional to duration, and then subjecting the latter signal to the criteria of duration established as amplitude levels to operate gating means automatically for rejecting the longer duration pulses and passing the shorter duration pulses.

3,801,902
ELECTRICAL MEASURING APPARATUS EMPLOYING A PLURALITY OF CONDITION RESPONSIVE DEVICES

Martin Horowitz, Lynbrook, N.Y., assignor to Gull Airborne Instruments, Inc., Smithtown, N.Y.

Filed July 27, 1972, Ser. No. 275,766
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **5 Claims**

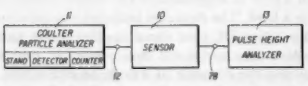


This electrical measuring apparatus includes a plurality of impedance devices such as capacitors for measuring the liquid level in an aircraft fuel tank. The impedance devices are supplied with electrical energy at high frequency (e.g., 10KHz) by a remote power supply. One terminal of each of the impedance devices is connected continuously by means of a shielded conductor to the high voltage output terminal of the power supply. The other terminal of each impedance device is at or near ground potential due to its connection (by an unshielded wire) to an input terminal of an operational amplifier. By shielding the high voltage power supply line, the high frequency signal appears in the same phase at all of the impedance devices. The induction of currents in external impedance devices due to stray electrostatic and electromagnetic fields is prevented by the shielding; and, errors arising from unequal phase shifts in the high frequency lines and from stray fields are thereby avoided.

3,801,903
PARTICLE STUDY APPARATUS INCLUDING AN AXIAL TRAJECTORY SENSOR

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 113,920, Feb. 9, 1971, which is a continuation-in-part of Ser. Nos. 84,440, Oct. 27, 1970, Pat. No. 3,701,029, and Ser. No. , , which is a continuation-in-part of Ser. No. 101,325, Dec. 24, 1970, Pat. No. 3,700,867. This application Sept. 11, 1972, Ser. No. 287,663
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **10 Claims**



Apparatus for use with apparatus operating in accordance with the principles of the Coulter electronic particle studying

device, for differentiating between particles passing on axial or near axial paths through an aperture and particles passing off center. The duration of each particle pulse produced by a particle passing through the aperture is measured at some fraction of the amplitude of an artificial pulse produced in the apparatus and only those particle pulses whose thus-measured durations meet the criterion of duration established by the sensor circuitry are permitted to pass for use in pulse height analysis following the sensor. Each artificial pulse is produced from each particle pulse by choosing as the amplitude of said artificial pulse the amplitude of the particle pulse at substantially the instant that the particle causing the same is halfway through the aperture of the particle studying device, and for this purpose electronic circuitry is provided for finding the center of the particle pulse. This is done for all particle pulses, irrespective of their durations, but only pulses which have durations that meet the criterion established by the circuitry are passed, the others being discarded on the basis of their longer durations. The apparatus provides structure for deriving a duration-measuring pulse whose duration is that of the artificial pulse at its fractional amplitude, converting the signal into one which has an amplitude proportional to duration, and then subjecting the latter signal to the criterion of duration established as an amplitude level to operate gating means automatically for rejecting the longer duration pulses and passing the shorter duration pulses.

3,801,904

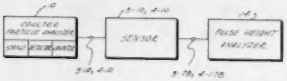
PARTICLE STUDY APPARATUS INCLUDING AN AXIAL TRAJECTORY SENSOR

Walter R. Hogg, Miami Lakes, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 113,165, Feb. 8, 1971. This application Sept. 11, 1972, Ser. No. 287,800

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 CP **10 Claims**



Apparatus for use with apparatus operating in accordance with the principles of the Coulter electronic particle studying device, for discriminating between signals from particles passing on axial or near axial paths through an aperture and particles passing off center on the basis of their differing durations. The pulse duration of a portion of the pulse is measured and only those which meet the criteria of duration established by the sensor circuitry are permitted to pass for use in pulse height analysis apparatus following the sensor. The other pulses are discarded on the basis of their greater durations. The apparatus provides structure for deriving a duration-measuring pulse whose duration extends in one case from the peak of a particle pulse to a fractional amplitude thereof, and in another case from the time of maximum slope of the leading edge to the time of maximum slope of the trailing edge. In each case the duration-measuring pulse is converted into a signal which has an amplitude proportional to duration and the latter signal is compared with a certain maximum signal level to oprate gating means for rejecting the longer duration pulses and passing the shorter duration ones. Multiple peak pulses are also discarded by means of suitable circuitry.

3,801,905

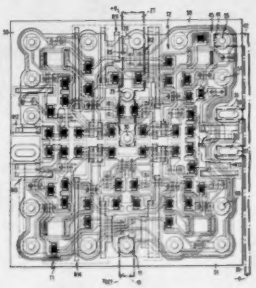
METHOD OF TESTING FOR THE OPERABILITY OF INTEGRATED SEMICONDUCTOR CIRCUITS HAVING A PLURALITY OF SEPARABLE CIRCUITS

Theodore H. Baker; Majid Chafghaichi; Richard C. Stevens, all of Poughkeepsie, and Daniel Tuman, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 129,500, March 30, 1971, Pat. No. 3,762,037. This application May 29, 1973, Ser. No. 364,791

Int. Cl. G01r *15/12, 31/02*

U.S. Cl. 324—73 R **6 Claims**



A method for determining whether an integrated circuit chip containing a plurality of separable circuits is operable when one or more of the separable circuits is not functional.

A chip including a plurality of discrete or separable circuits, each of which include means for selectively receiving and distributing a voltage level necessary to render the particular circuit operable, the chip further including a region of one type conductivity at said voltage level common to all of the discrete circuits is tested by a method which will insure that short-circuits between a particular circuit found not to be functional and therefore not to be rendered operable and the common region will not inadvertently apply the voltage level from the common region to voltage receiving and distribution means in the non-functional circuit.

All the discrete circuits are first tested to determine which are functional. Then these circuits which fail the functionality test are tested further to detect whether any of these failed circuits have electrical short-circuits between the common region and the means for receiving and distributing said operable voltage level in the failed circuit. If any of the failed circuits have such a short, the chip is considered to be inoperative because such a short will inadvertently connect the failed circuit with the functional circuits.

3,801,906

DIGITAL FREQUENCY METER

Thomas A. Harris, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

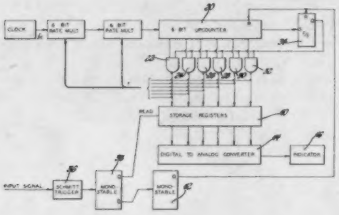
Filed Jan. 23, 1973, Ser. No. 326,052

Int. Cl. G01r *23/02*

U.S. Cl. 324—78 D **3 Claims**

A digital frequency meter is disclosed which includes a downcounter which is initialized to a state corresponding to the maximum frequency to be measured. The initialization occurs at a time equal to the period of the maximum frequency following the beginning of the period of the input signal to be measured. The downcounter is decremented from this initialized state at a rate proportional to the square of the present

state of the counter. The binary output of the downcounter is sampled at the end of the period of the input signal and is converted to a voltage representing the frequency of the input signal.



3,801,907

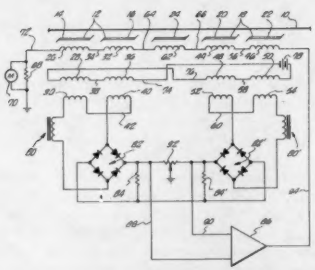
DIRECT CURRENT MEASUREMENT

Manfred Lilienstein, 5276 Willow Wood Rd., Rolling Hills Estates, Calif.

Filed Oct. 12, 1972, Ser. No. 296,878

Int. Cl. G01r *33/00, 1/22*

U.S. Cl. 324—117 R **8 Claims**



A direct current measuring device utilizing two pairs of saturable toroidal reactors to generate two output signals which are compared to provide a feed back signal. The feed back signal is applied to the reactors through serially connected feed back windings to balance the output signals. The pairs of reactors have a bias signal applied through serially connected bias windings so that the bias signal applied to one pair is opposite in sense to the bias signal applied to the other pair. The magnitude of the feed back signal is measured to provide a direct indication of the current flow being measured.

3,801,908

CURRENT MEASURING APPARATUS EMPLOYING MAGNETIC SWITCH

Eleonoor Van Andel, Twekkelo, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

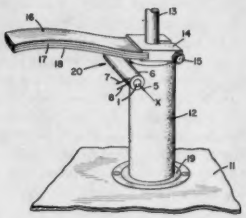
Filed Mar. 9, 1972, Ser. No. 233,189

Claims priority, application Netherlands, Mar. 16, 1971, 7103542

Int. Cl. G01r *33/00, 33/02*

U.S. Cl. 324—117 R **9 Claims**

Current measuring apparatus for determining the strength of the current in an electric conductor. The apparatus comprises an actuating coil, a magnetic switch positioned within the composite magnetic field produced by the currents flowing through the conductor and the actuating coil, generating means coupled to the actuating coil for providing an increasing exciting current or an increasing step-wise voltage thereto, and measuring apparatus coupled to the magnetic switch for determining the instant at which the switch changes from one state to the other under the influence of the composite magnetic field. The current through the actuating coil at the instant that the switch changes states corresponds to the magnitude of the current through the electric conductor. The apparatus may be used in conjunction with the operation of electrolytic cells having large numbers of anodes wherein it is useful to know the current flowing through each anode.



3,801,909

MEASURING DEVICE FOR ELECTRICAL COMPONENTS

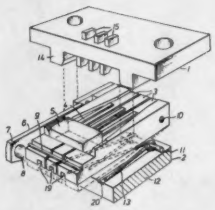
Gunter Hamann, and Gunter Zschieschank, both of Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed May 18, 1972, Ser. No. 254,572

Claims priority, application Germany, May 28, 1971, 2126541; May 28, 1971, 7120753

Int. Cl. G01r *31/00, 31/22*

U.S. Cl. 324—158 F **6 Claims**

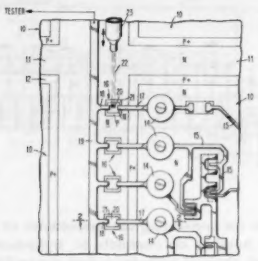


A measuring device for electrical components with strip or wire formed leads parallel to each other comprises a measuring mounting and a component receiver having a frame cooperating with the measuring mounting for centering purposes, a plurality of insulating members within the frame, arranged in laminar abutting formed and each having a surface for supporting a component lead, spring pivot means for urging the frame and insulating members to pivot in a direction perpendicular to the support surfaces of the insulating members and further pivot means for enabling pivoting movement of the frame and the insulating members in the plane of the support surfaces.

3,801,910
EXTERNALLY ACCESSING MECHANICAL DIFFICULT TO ACCESS CIRCUIT NODES USING PHOTO-RESPONSIVE CONDUCTORS IN INTEGRATED CIRCUITS

Hubert F. Quinn, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,407
Int. Cl. G01r *31/26, 15/12*
U.S. Cl. 324—158 D **14 Claims**

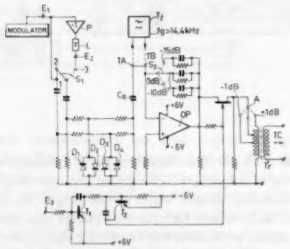


A structure for selectively externally accessing mechanically difficult to access circuit nodes in an integrated circuit by the combination of an externally accessible circuit terminal and a plurality of connecting means, each of which connect a particular circuit node which is difficult to access to said terminal. Each of the connecting means includes a photoconductive semiconductor device which is normally electrically nonconductive but which is adapted to electrically conduct when subjected to localized light such as a laser beam. When the particular photoconductive device is rendered conductive, it in turn makes the connecting means associated with it conductive and, thereby, provides a conductive path from the particular circuit node to the externally accessible terminal.

3,801,911
SYNCHRONOUS FM-MODEM

Hans-Joachim von Horsten, Bremen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,441
Claims priority, application Germany, Feb. 13, 1971, 2106836
Int. Cl. H04l *27/10*
U.S. Cl. 325—30 **2 Claims**

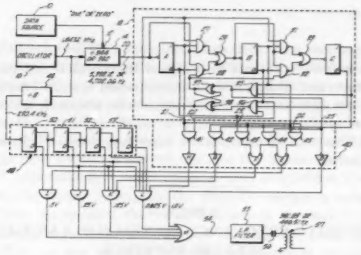


A synchronous in-plant FM modem for data transmission through local cables or internal telephony lines by means of FSK-modulation. The in-plant modem, when being used in a multi-drop arrangement, may be adapted in a simple manner to the various transmission characteristics by selectively subtracting a delayed version of the modulated carrier from the modulated carrier in the transmitter section thereby selectively producing either binary FSK or pseudoternary FSK and by adjusting in the receiver section the value of a coupling capacitor between line output and receiver filter.

3,801,912
FREQUENCY MODULATION COMMUNICATION SYSTEM AND DIGITAL CARRIER GENERATOR AND DEMODULATOR FOR USE THEREIN

Robert Gordon Ragsdale, Hollywood, Fla., assignor to Milgo Electronics Corporation, Miami, Fla.

Filed Mar. 27, 1972, Ser. No. 238,407
Int. Cl. H04l *27/10*
U.S. Cl. 325—30 **30 Claims**



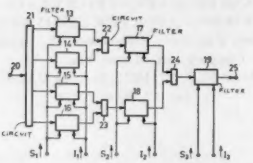
A data transmitter-receiver system for transmitting information over a communication link such as a telephone line is described. The information is encoded on a carrier wave at the transmitter by generating and sending the carrier at one of a plurality of selected frequencies, e.g. two, during successive modulation periods. The carrier wave at the selected frequency is generated by means of a digital wave generator which includes a pulse generator for generating a series of pulses which vary between first and second voltage levels at a pulse repetition rate which is high compared to the carrier wave frequency. A timing signal generator generates timing signals representative selected increments of the carrier wave period at each selected frequency. Gating means having an input connected to the pulse generator and an output is controlled by the timing signal generator for coupling a selected number of pulses to the output thereof during each of the time increments to provide an output signal having an average amplitude in the form of a recurring stair step which digitally simulates a sine or cosine wave. The gating means output signal is coupled to the telephone line via an integrator in the form of a low pass filter so that an analog sine or cosine wave at the selected frequency for each modulation period is transmitted to the receiver.

A digital demodulator is provided at the receiver which includes a pulse generator for generating a train of pulses, a counter for counting the time interval of a given portion such as each one-half of a cycle of the received carrier wave and gating means for coupling a selected number of pulses to an integrator in accordance with the time interval of each one-half cycle of the received carrier wave. The resultant d.c. signal at the integrator output has an amplitude representative of the carrier frequency during each modulation period. A level detector is provided for translating the integrator output signals into binary data.

3,801,913
NUMERICAL FILTER AND DIGITAL DATA TRANSMISSION SYSTEM INCLUDING SAID FILTER

Jacques Lucien Daguet, Saint-Maur, and Maurice Georges Bellanger, Antony, both of France, assignors to Telecommunications Radioelectriques Et Telephoniques, T.R.T., Paris, France

Filed Apr. 6, 1972, Ser. No. 241,661
Claims priority, application France, Apr. 8, 1971, 71.12498
Int. Cl. H03k 5/18
U.S. Cl. 325—38 R 2 Claims

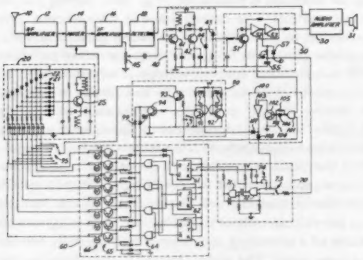


The invention relates to a digital filter which can be programmed, and a digital data transmission system employing automatic equalization of the transmission channel, said transmission system being adapted in such a manner that said digital filter can be used for the filter functions of transmitter and receiver.

3,801,914
PRIORITY-FREQUENCY SYSTEM FOR A SIGNAL-SEEKING RECEIVER

Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Chicago, Ill.

Filed June 27, 1972, Ser. No. 266,652
Int. Cl. H04b 1/36
U.S. Cl. 325—334 4 Claims

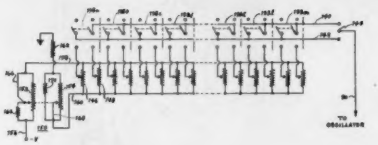


A priority-frequency system is provided for a signal-seeking receiver to automatically tune the receiver to a priority signal whenever it is received. During non-priority receiver operation, a scanning circuit causes the receiver to automatically scan a plurality of predetermined frequencies and tune to a received signal having a frequency corresponding to one of the predetermined frequencies. The priority system includes an astable switching circuit for periodically overriding the scanning circuit to tune the receiver to a priority frequency which is selected from the predetermined frequencies by a manual switch. When a priority signal is received, a control circuit stops the astable switching means so that the receiver is automatically tuned to the priority station whenever a signal of that frequency is received.

3,801,915
METHOD AND APPARATUS FOR CONVERTING ELECTRICAL SIGNALS

Joseph J. Ostuni, Liverpool, and Floyd O. Vincent, East Syracuse, both of N.Y., assignors to The Magnavox Company, Ft. Wayne, Ind.

Continuation of Ser. No. 120,994, March 4, 1971, abandoned.
This application Jan. 31, 1973, Ser. No. 328,424
Int. Cl. H04b 1/16
U.S. Cl. 325—453 7 Claims

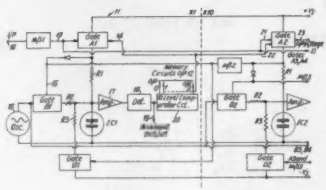


A converter for converting the frequencies of input signals in one of a number of channels to frequencies within a predetermined channel includes a first mixer for raising the frequency of the input signals so that signals within a selected channel are raised to a supervideo channel, and a second mixer for lowering the frequencies of signals within the supervideo channel to a predetermined television channel. The first mixer is a balanced, push-pull circuit, and incorporates a varactor oscillator which is controlled by pushbutton adjustment of a d.c. potential to oscillate at a selected frequency above the supervideo band.

3,801,916
ELECTRO-CHEMICAL ODOMETER

William J. Brittain, Westcliff-on-Sea, and Jaan Lindre, Hadleigh, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 13, 1972, Ser. No. 297,581
Claims priority, application Great Britain, Oct. 26, 1971, 49700/71
Int. Cl. G04f 9/00
U.S. Cl. 324—182 3 Claims



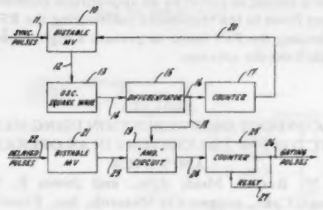
Described is an electro-chemical pulse counter suitable for use as a vehicle odometer. The pulse counter may include a number of identical stages, each of the stages having an electro-chemical cell. When DC current pulses pass between cell electrodes, metal is transferred from one electrode to another and this changes the cell's electrical resistance. If the DC pulses are related to distance traveled by a vehicle, the cell resistance is proportional thereto. This is detected by an AC signal applied to the electro-chemical cell. The AC signal does not change the cell's resistance.

3,801,917

TIME INTERVAL MEMORY DEVICE

Arnold Weinstein, Flushing, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1965, Ser. No. 442,237
Int. Cl. G01r 29/02; H03k 5/13
U.S. Cl. 328—129 7 Claims



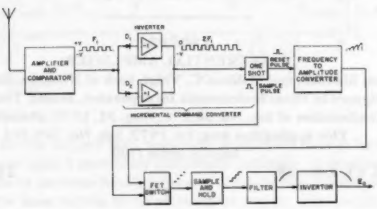
A time interval memory circuit having a pair of counters to count the oscillations from an oscillator of known frequency with bistable switching means coupled to start oscillation generation at the instant of receiving an initial pulse and to gate these oscillations in a manner that one of said counters counts only oscillations between the initial pulse and a delayed pulse following each initial pulse, such as radar transmitted and echo pulses.

3,801,918

LOW-PHASE-SHIFT INCREMENTAL FM DEMODULATOR

David T. Milne, Silver Spring, Md., and George W. Cook, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,526
Int. Cl. H03d 3/00
U.S. Cl. 329—104 25 Claims



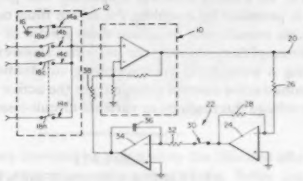
This device demodulates an FM signal by generating switching pulses for each zero crossing of the FM signal. The switching signals are then used to control a charging circuit whose output amplitude is linearly proportional to the modulated frequency and thereby to the original intelligence in amplitude form, used to frequency modulate the carrier. The output is a series of discrete amplitudes forming the envelope of the original information. The device produces a linear correspondence between frequency and amplitude without an intermediate step of removing the carrier in the conventional way by a six pole filter.

3,801,919

NULL LOOP FOR CORRECTING LOW FREQUENCY ERROR SIGNALS IN HIGH PERFORMANCE AMPLIFIERS

Don Earl Wilkes, Houston, and Charles L. Thompson, Stafford, both of Tex., assignors to Mandrel Industries, Inc., Houston, Tex.

Filed Oct. 30, 1972, Ser. No. 294,450
Int. Cl. H03f 1/26
U.S. Cl. 330—9 5 Claims



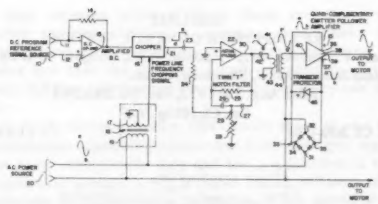
A feedback null loop includes a low drift, first loop amplifier connected to the output of a fast settling, large drift amplifier means which is to be corrected for AC and DC errors due to stray signal coupling. A second loop amplifier with high impedance is coupled to the low drift first loop amplifier via electronic switch means. A ground line is provided to the input of the large drift amplifier means; e.g., via the conventional multiplexer apparatus in a multi-channel data acquisition system, whereby the output voltage of the amplifier means is nulled to zero. Prior to opening the switch means in the null loop, a capacitor stores a fixed voltage representing the error signal. Thereafter, as the multiplexer apparatus selects successive channels of the data acquisition system, any DC off-set levels are balanced out via the temporarily stored capacitor voltage.

3,801,920

A. C. CONTROL CIRCUIT

James C. Strickland, North Miami Beach, Fla., assignor to MCI Inc., Ft. Lauderdale, Fla.

Filed Oct. 16, 1972, Ser. No. 298,046
Int. Cl. H03f 3/38
U.S. Cl. 330—10 8 Claims



An a.c. control circuit comprising circuitry connected to receive a d. c. program reference control voltage, as from a speed, tension, or torque voltage-responsive source, and which may include a suitable d.c. amplifier connected to provide the d.c. input to a suitable chopper having a chopping drive signal circuit connected to a main a.c. power source to provide a square wave chopper output having a peak-to-peak amplitude responive to the programmed d.c. input voltage and a frequency equal to and 180° out of phase with the main a.c. power source frequency. This programmed square wave control signal is coupled to an active filter which may comprise an

operational amplifier having a negative feedback with a sharply tuned filter therein, such as a sharp twin-T notch filter tuned sharply to the frequency of the main a.c. power source, whereby a stable and drift-free sine wave output control voltage is provided having a frequency synchronous and in phase with the main a.c. power source frequency and a peak-to-peak amplitude directly responsive to the chopper square wave output amplifier. The controlled a.c. power is supplied through a full-wave rectifier such as an unfiltered full-wave bridge rectifier, having inputs connected across the main a.c. power source and outputs connected to emitter-follower power inputs of an emitter-follower amplifier. The programmed control is provided by coupling the active filter output through a suitable transformer to a base drive circuit of the emitter-follower amplifier, whereby the latter has a power output voltage having a wave form corresponding substantially to the programmed drive control voltage from the active filter, free from line voltage fluctuations or variable circuit-component effects.

3,801,921

AMPLIFIER ARRANGEMENT

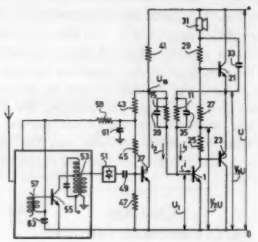
Gerrit Wolf, Lahore, Pakistan, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,417

Claims priority, application Great Britain, June 5, 1970, 27241/70

Int. Cl. H03f 3/26

U.S. Cl. 330—15 **6 Claims**



Correction of the setting point of a transistor amplifier stage with supply voltage variations by supplying additional base biasing current, which compensates the influence of the base-emitter voltage.

3,801,922

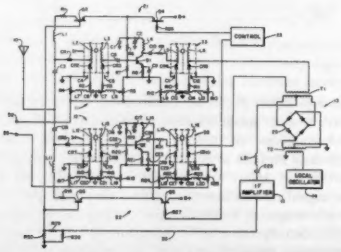
RF AMPLIFIER CONTROL SYSTEM

Robert P. Muszkiewicz, Getzville, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,393

Int. Cl. H03g 3/30

U.S. Cl. 330—29 **11 Claims**



Two RF amplifiers may be selectively coupled and decoupled between a single antenna and a single mixer by switching circuits associated with each amplifier. A PIN diode is connected between the antenna and the input of each RF amplifier. A switching arrangement includes a complementary pair of transistors, one connected between a source of DC operating voltage and the amplifier and the other connected between the first transistor and the PIN diode. When the first transistor is biased to conduction by an appropriate control voltage, the associated RF amplifier is activated and DC current flows through both transistors causing the PIN diode to present a low impedance to RF signals from the antenna. When the first transistor is biased to cutoff by an appropriate control voltage, no current flows in the transistors inactivating the RF amplifier and causing the PIN diode to present a high impedance to RF signals from the antenna.

3,801,923

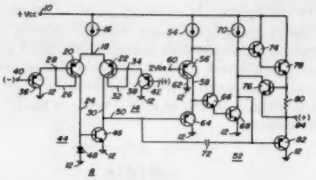
TRANSCONDUCTANCE REDUCTION USING MULTIPLE COLLECTOR PNP TRANSISTORS IN AN OPERATIONAL AMPLIFIER

Ronald W. Russell, Mesa, Ariz., and James E. Solomon, Saratoga, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 11, 1972, Ser. No. 270,765

Int. Cl. H03f 3/08

U.S. Cl. 330—30 D **3 Claims**



A differential input stage for an integrated circuit operational amplifier, having low transconductance, yet having high frequency response. The low transconductance of the differential input stage is achieved without sacrificing frequency response by using multiple collector lateral PNP transistors, whereby only a fraction of the total PNP transistor current flows in the collector circuit and contributes to the transconductance of the differential amplifier stage.

3,801,924

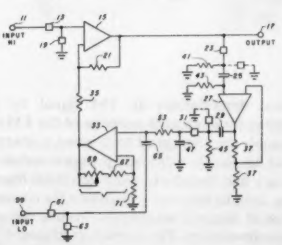
DIFFERENTIAL AMPLIFIER

Hans Mueller, and William C. Voigt, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 68,276, Aug. 31, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,316

Int. Cl. H03f 1/00

U.S. Cl. 330—69 **2 Claims**



A differential amplifier used as a line receiver for time multiplexed analog signals is shown. The normal amplification

operation of the amplifier is cut off at predetermined intervals and the amplifier is reset.

3,801,925

FREQUENCY SYNCHRONISERS

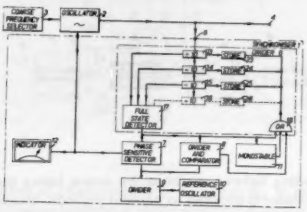
John Michael Parkyn, St. Albans, England, assignor to Marconi Instruments Limited, Chelmsford, Essex, England

Filed Sept. 6, 1972, Ser. No. 286,536

Claims priority, application Great Britain, Sept. 10, 1971, 42265/71

Int. Cl. H03b *3/08*

U.S. Cl. 331—1 A **6 Claims**



A frequency synchroniser is used to improve the accuracy of a signal generator. The synchroniser has its own reference oscillator from which is obtained a signal which is compared at a phase sensitive detector with a signal derived from the signal generator by a frequency division. An indication is provided as to whether or not the signal derived from the signal generator has been divided by the correct factor.

3,801,926

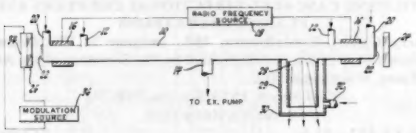
HIGH INTENSITY RADIATION SOURCE

Tom T. Kikuchi, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1972, Ser. No. 285,139

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **4 Claims**



An atomic oxygen laser produces, in addition to or in lieu of coherent light, a secondary ultra-violet radiation. A window in the side of the laser housing permits the radiation to escape so that the laser serves as an ultra-violet source. The radiation can be modulated by vibrating an end mirror of the laser. If coherent light from the laser is not desired, the end mirrors are made fully reflecting. Other types of lasers produce secondary radiation at various frequencies so that these other lasers may be modified for use as radiation sources as well.

3,801,927

LASER AND METHOD OF OPERATION

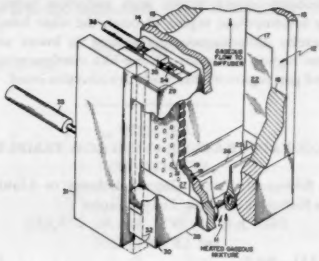
Richard A. Allen, Watertown, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed May 24, 1967, Ser. No. 643,296

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **4 Claims**

A laser and method of operating same wherein an optical resonator which receives a gas from supersonic nozzle includes a fully reflective mirror and an oppositely disposed mirror partially transmissive by reason of hole coupling. The partially transmissive mirror does not include a permanently mounted transmitting window during operation. During start-up, the holes are covered by a shutter or the like and after the laser has been started aerodynamically, the holes are uncovered.



3,801,928

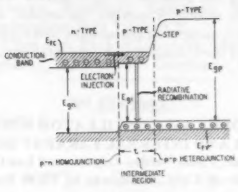
SINGLER HETEROSTRUCTURE JUNCTION LASERS

Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 33,705, May 1, 1970, Pat. No. 3,758,875, which is a continuation-in-part of Ser. No. 787,459, Dec. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 766,902, Oct. 11, 1968, abandoned. This application Nov. 17, 1972, Ser. No. 307,219

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 D **16 Claims**



A light emitting heterostructure diode includes a multilayered structure having a common conductivity type heterojunction and a p-n junction separated therefrom by a distance less than the diffusion length of minority carriers, thereby defining an intermediate region bounded by said junctions.

In a single heterostructure (SH) diode there is one such heterojunction separating narrow and wide band gap regions of the same conductivity type and the p-n junction is a p-n homojunction formed in one instance by the diffusion of impurities into the narrow band gap region. When provided with an appropriate resonator, a confinement effect produced by an energy step (at the heterojunction) in the conduction band permits the SH diode to lase at higher temperatures and lower thresholds than heretofore possible, radiative electron-hole recombination occurring between the conduction and valence bands.

In a double heterostructure (DH) the diode is provided with a second heterojunction positioned on the side of the p-n junction remote from the other heterojunction, or positioned coincident with the p-n junction, thereby defining an intermediate region between the pair of heterojunctions. When provided with an appropriate resonator the DH diode exhibits lower thresholds at higher temperatures than even the aforementioned SH diode.

In both diodes additional improvement in the threshold occurs if the diode is provided with deep impurity levels or deep band tails.

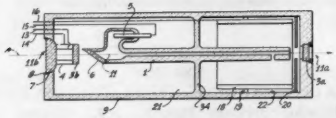
Without a resonator, both the SH and DH diodes function as electroluminescent diodes with radiation being emitted from the intermediate region through the wide band gap region, thereby advantageously resulting in lower absorption losses and higher efficiency. Dome-like configurations of the wide band gap region of this diode are also disclosed.

3,801,929

GAS LASER APPARATUS HAVING LOW TEMPERATURE SENSITIVITY

Harumi Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 31, 1972, Ser. No. 276,668
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **10 Claims**



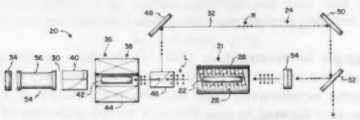
A gas laser including a cylindrical-shaped enclosure housing that is made of a low thermal expansion coefficient material. A laser discharge tube has positive and negative spaced apart electrodes at opposite ends. A pair of resonator mirrors are positioned one at either end of the laser discharge tube in the path of a laser beam passing out of the discharge tube. A piezoelectric device is operably connected to one of the mirrors for adjusting the position of such mirror relative to the other mirror. The resonator mirrors, the crystal, and the laser discharge tube are mounted substantially symmetrically about the central axis of the cylindrical-shaped enclosure housing.

3,801,930

SINGLE MODE LASER OSCILLATOR WITH RING RESONATOR AND INTERNAL FARADAY ISOLATOR

Ralph F. Wuerker, Palos Verdes Estates, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, N.J.

Filed Nov. 30, 1972, Ser. No. 310,857
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **15 Claims**



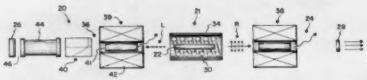
A standing light wave within the active lasing medium of a laser oscillator is avoided to prevent periodic bleaching of the medium and thereby foster single mode oscillation and improve coherence. The laser oscillator includes a ring resonator having a 180° optically folded portion and a ring portion containing the lasing medium and an optical rotator. The Farady isolator and optical rotator permit coherent light propagation in one direction only through the resonator cavity, such that light reflection occurs in one direction only through the lasing medium and no standing wave is created in the medium. The oppositely traveling light waves within the folded cavity portion establish a standing wave region in which may be located a bleachable mode selector, such as a dye cell, for suppressing undesired oscillating modes and thereby further improving coherence.

3,801,931

SINGLE MODE LASER OSCILLATOR WITH LINEAR RESONATOR AND INTERNAL FARADAY ISOLATOR

Lee O. Heflinger, Torrance, and Ralph F. Wuerker, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 30, 1972, Ser. No. 310,869
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **13 Claims**



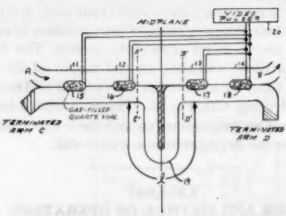
A standing lightwave within the active lasing medium of a laser oscillator is avoided to prevent periodic bleaching of the medium and thereby foster single mode oscillation and improve coherence. A Faraday isolator and an optical rotator located within the opposite end regions of the laser resonator cavity, between the lasing medium and cavity end reflectors, changes the direction of polarization of the coherent light propagating through these cavity regions and blocks oscillation of light which propagates from the lasing medium with other than certain favored directions of polarization in such a way that the oppositely traveling lightwaves within the lasing medium have mutually perpendicular planes of vibration and hence do not interfer to produce a standing wave in the medium. The oppositely traveling lightwaves within one end of the resonator cavity establish a standing wave region in which may be located a bleachable mode selector, such as a dye cell, for suppressing undesired oscillating modes and thereby further improving coherence.

3,801,932

MICROWAVE HIGH POWER PHASE SHIFTER UTILIZING CASCADED DIRECTIONAL COUPLERS AND PLASMA THYRATRONS

Harry Coldie, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1973, Ser. No. 358,791
Int. Cl. H01p *1/18*
U.S. Cl. 333—31 A **2 Claims**



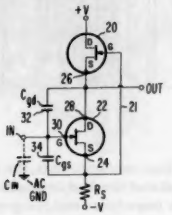
A microwave high power phase shifter is formed by two pairs of cascaded short slot hybrids whose slots are filled by low pressure gaseous volumes. Activation of the gas to the plasma state provides single-bit phase shifting action in the milliwatt to megawatt power range.

3,801,933

LOW NOISE DETECTOR AMPLIFIER

Melvin John Teare, Pierrefonds, Quebec, Canada, assignor to RCA Limited, St. Anne De Bellevue, Quebec, Canada

Filed Apr. 21, 1972, Ser. No. 246,468
Claims priority, application Canada, Apr. 17, 1972, 139882
Int. Cl. H03f 3/16
U.S. Cl. 330—35 6 Claims



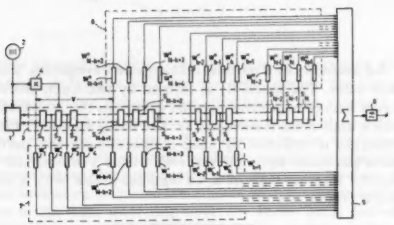
An amplifier of electromagnetic wave energy in the visible and infrared range includes a photo sensitive detector coupled to a pair of cascoded field-effect transistors arranged to operate at substantial unity gain. A positive feedback path includes the input capacitances of the amplifier reducing and thereby neutralizing the input capacitances of the amplifier. The bandwidth of the amplifier is extended relative to the neutralization of the input capacitances.

3,801,934

FILTER FOR BINARY PULSE SIGNALS

Petrus Josephus Van Gerwen, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 12, 1972, Ser. No. 296,766
Claims priority, application Netherlands, Oct. 16, 1971, 7114263
Int. Cl. H03h 7/28
U.S. Cl. 333—70 T 6 Claims



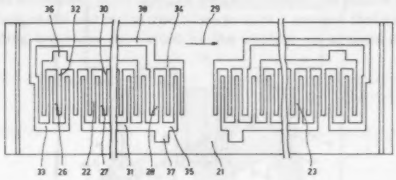
In a transversal filter for binary pulse signals provided with a shift register whose elements are connected through weighting networks to a combination network, exact zero points of the amplitude-versus-frequency characteristics are realized in spite of a relatively low number of shift register elements and associated weighting networks. At least two sets of weighting networks for forming transfer functions of alike shape, and each limiting the pulse spectrum in its bandwidth are connected to the shift register while corresponding weighting networks in adjacent sets of weighting networks are separated from one another by a prescribed number of shift register elements and the output signals from the different sets of weighting networks are combined in the combination network.

3,801,935

ACOUSTIC SURFACE WAVE DEVICES

Richard Frank Mitchell, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 12, 1972, Ser. No. 271,164
Claims priority, application Great Britain, July 21, 1971, 34170/71
Int. Cl. H03h 7/10
U.S. Cl. 333—72 1 Claim



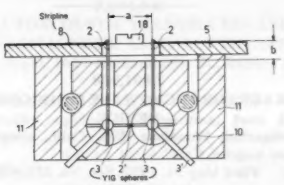
An acoustic surface wave device is provided with an interdigital transducer divided into a plurality of sections, the sections being connected in series. The transducer thus presents a higher and therefore more convenient terminal impedance. A filter embodiment is also shown in which two end sections of a transducer array are connected in series, thus reducing the source strengths of the electrodes without the disadvantage of either making the electrodes too narrow with consequent production errors, or with too short an overlap giving rise to errors due to end effects.

3,801,936

MINIATURIZED YIG BAND-PASS FILTER HAVING DEFINED DAMPING POLES

Peter Roschmann, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,202
Claims priority, application Germany, Aug. 26, 1971, 2142748
Int. Cl. H01p 1/20
U.S. Cl. 333—73 C 6 Claims



The invention relates to a miniaturized YIG band-pass filter with first poles for achieving high selectivity in the microwave range, in which the coupling structure consists of, for example, crossed coaxial inner conductors in an external magnet circuit which are semicircularly bent over the YIG elements, the coupling structure for the YIG resonators being arranged in a filter body which is made of, for example, copper or brass, such that the coaxial supply conductors for coupling the YIG resonators are adjacently arranged and are magnetically coupled, i.e., in the case of filters comprising an even number of YIG resonators they are coupled to each other, and in the case of filters comprising an odd number of YIG resonators the first and the last supply conductor are coupled. The magnetic coupling between the supply conductors can be varied by means of a displaceable shutter.

3,801,937

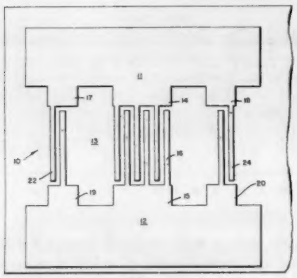
ACOUSTIC PULSE COMPRESSION WEIGHTING FILTER TRANSDUCER

Thomas W. Bristol, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 20, 1973, Ser. No. 334,175

Int. Cl. H03h *9/00*

U.S. Cl. 333—72 **6 Claims**



In order to improve the resolution of radar systems, one present practice is to interpose a pulse expansion filter in the transmitting channel of the radar system in conjunction with a pulse compression filter in the receiving channel whereby a longer pulse is transmitted than is applied to the detection apparatus of the system. When such a "pulse compression" system is used without weighting, the filter time sidelobe responses limit the resolution of adjacent targets to 13 decibels difference in amplitude. In accordance with the present invention, a class of unapodized nondispersive acoustic surface wave transducers is realized having spectral response functions that provide spectral weighting for time sidelobe reduction in pulse compression filters to extend the resolving power of a pulse compression radar system to as much as 43 decibels.

3,801,938

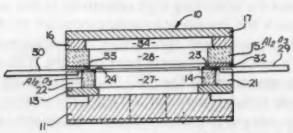
PACKAGE FOR MICROWAVE SEMICONDUCTOR DEVICE

Haig Goshgarian, Woodlane Hills, Calif., assignor to TRW Inc., Los Angeles, Calif.

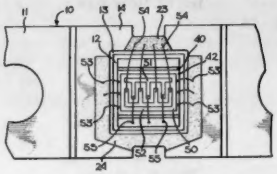
Filed May 31, 1972, Ser. No. 258,158

Int. Cl. H05h *5/00*

U.S. Cl. 333—84 M **10 Claims**



A package for holding a microwave semiconductor device adapted for use with strip transmission line. A multilayer structure is assembled upon a conductive header, the elements of the multilayer structure having metallized surfaces thereon for making contact to the microwave semiconductor device. The input and output to the package are adapted for use with



strip transmission line configurations, the multilayer structure providing electrical and thermal conductive paths and adapting the package for impedance matching operations.

3,801,939

WAVEGUIDE ASSEMBLY

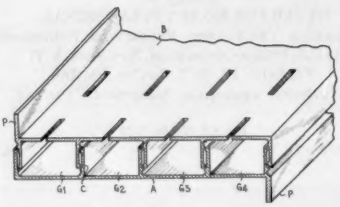
Michel Lamy, and Michel Vallet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 13, 1973, Ser. No. 351,038

Claims priority, application France, Apr. 19, 1972, 72.13829

Int. Cl. H01p *3/12, 11/00*

U.S. Cl. 333—95 R **4 Claims**



An assembly of n parallel rectangular waveguides, joined at their sides. The assembly is formed by two open-profile elements having respective parallel partitions the interlocking of which defines the *n* waveguides. The fixing together of the two elements is affected by snap-connection of the partitions, those partitions having to this end, beside a smooth side forming the internal wall of a waveguide, a side with a double-notch profile.

3,801,940

ELECTROMAGNETIC RELAY

Erwin Grassl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 8, 1972, Ser. No. 232,796

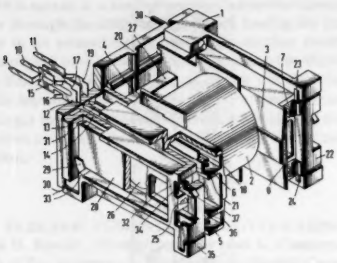
Claims priority, application Germany, Mar. 12, 1971, 2112085

Int. Cl. H01h *47/02*

U.S. Cl. 335—135 **8 Claims**

An electromagnetic relay, particularly useful for telecommunications switching purposes is described. The relay has a series magnetic circuit comprised of a magnetic core encircled by an excitation winding, a short circuit yoke arranged in parallel to the winding axis of the core and two magnetizable flat armatures pivotally mounted at the front end of the short circuit yoke. The armatures are biased into a rest position by

contact spring sets and thereby form two working air gaps with the poles of the magnetic core. In their operating positions the



armatures magnetically bridge the short circuit yoke and the magnetic core.

3,801,941

COIL WINDING

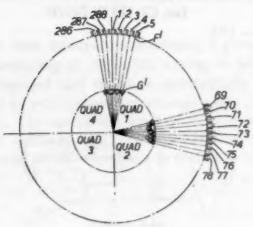
Peter Harold Phillips, Fareham, England, assignor to Plessey Handel Und Investments A.G., Guz, Switzerland

Filed Jan. 26, 1973, Ser. No. 323,010

Claims priority, application Great Britain, Jan. 13, 1972, 1564/72

Int. Cl. H01f 7/00

U.S. Cl. 335—210 **2 Claims**



A cone-shaped magnetic core structure for receiving toroidal beam deflection coils for use with cathode ray tubes. The magnetic core structure has attached to the respective front and rear ends thereof relatively large and small diameter grooved insulating structures. The grooves in the insulating structure are mutually arranged so that in one pair of opposite quadrants looking along the central axis of the core grooves of the rear insulating structure are aligned with even-numbered grooves in the front insulating structure. In the other pair of opposite quadrants the grooves of the rear insulating structure are aligned with odd-numbered grooves of the front insulating structure.

3,801,942

ELECTRIC MAGNET WITH SUPERCONDUCTIVE WINDINGS

Werner Elsel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

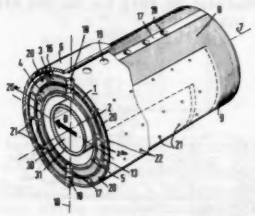
Filed Mar. 23, 1973, Ser. No. 344,216

Claims priority, application Germany, Mar. 27, 1972, 2214954

Int. Cl. H01f 7/22

U.S. Cl. 335—216 **10 Claims**

A superconductive magnet coil having an elongated cylindrical dipole superconducting winding is supported on a carrier cylinder, the winding comprising two winding components shaped as cylinder segments which are symmetrical with respect to a plane of symmetry which goes through the longitudinal axis of the carrier cylinder and which is perpendicular to the magnetic field of the coil. The winding components each consist of a plurality of superimposed winding layers each having axially extending sides approximately parallel to the longitudinal axis of the carrier cylinder and circumferentially extending winding heads, the mutually corresponding winding layers of these winding components cooperatively forming cylindrical layers. On at least one side each of the winding layers has bare uninsulated surfaces contacting a liquid permeable layer through which a coolant can pass in axial, tangential and radial directions in such a manner that each winding layer can be wetted by the coolant on at least that



side. Support bars extend between the respective axially extending sides of the two winding components to support them circumferentially apart, and these bars have relatively large coolant passages formed in them and extending radially with respect to the coil winding from the liquid permeable layers to the outer periphery of the coil. The winding components are held together and on the winding carrier cylinder by high-tensile strength wrappings and suitably shaped cores are positioned within the components' windings, and smaller coolant passages are formed through these parts so as to extend radially from the liquid permeable layers to the outer coil periphery. The magnet coil may be operated horizontally as well as vertically, immersed in a liquid coolant bath.

3,801,943

ELECTOACOUSTIC TRANSDUCERS AND ELECTROMAGNETIC ASSEMBLY THEREFOR

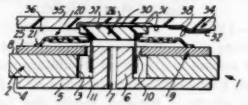
Jose Juan Bertagni, 1027 Hernandarias St., Buenos Aires, Argentina

Filed June 5, 1972, Ser. No. 259,378

Claims priority, application Argentina, June 16, 1972, 236220

Int. Cl. H01f 7/00

U.S. Cl. 335—231 **37 Claims**



An electroacoustic transducer comprising a diaphragm and an electromagnetic assembly in driving relationship with the diaphragm, the assembly comprising a magnet, a core defining a gap in the magnet, a coil supported by a coil holder movably arranged in the gap with an end portion facing the diaphragm, a cap on said end portion having a top surface directed toward, and in driving relationship with, the diaphragm, the surface being preferably secured to the diaphragm by means

of an adhesive. The adhesive may be soft or hard and the diaphragm is preferably flat. The cap seals the coil holder and a perforation is provided connecting the space formed between the cap, coil holder, core and gap with another surrounding whereby a rectilinear to and fro movement pump is defined by the cap, coil holder and core, the pumping action moving air to cool the coil. The lower end of the coil holder has a flange to prevent the coil from being shock-removed from the coil holder, and the upper end of the holder has a flange which is adhered to the cap.

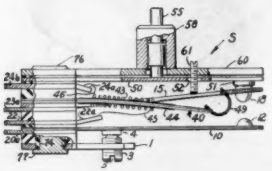
3,801,944

TEMPERATURE-COMPENSATED, THERMAL-ACTIVATED TIME DELAY SWITCH

Richard J. Brown, Mentor, Ohio, assignor to Tri-Men Manufacturing, Inc., Painesville, Ohio

Filed Sept. 28, 1972, Ser. No. 292,971

U.S. Cl. 337—103 **10 Claims**



A temperature-compensated thermal-activated time delay switch comprising a base plate on which is mounted a current conducting bimetallic blade, a second current carrying blade supported by the base plate in spaced relation to the bimetallic blade, a bimetallic actuator strip carrying an electrical resistance heating element supported above the second blade and adapted to actuate said second blade through the medium of a spring member; whereby the two blades are normally in current conductive contact, but by reason of heat from the resistance element causing flexure of the bimetallic strip, they may be caused to separate with irreversible snap action, and reset means for bringing the blades again into contacting condition after the strip has cooled; additional means are provided for adjusting the position of the bimetallic strip in its unheated condition and further means are provided for adjusting the position of the bimetallic blade, whereby the time delay period for snap action of the switch is controlled within accurate limits in all ranges of ambient operational temperatures.

3,801,945

QUICK ACTING HIGH VOLTAGE FUSE

John Francis Howard, Peterborough , Ontario, Canada, assignor to Canadian General Electric Company Limited, Ontario, Canada

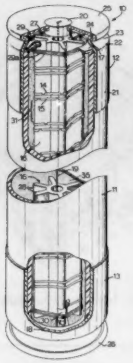
Filed Sept. 28, 1971, Ser. No. 184,355

Claims priority, application Canada, Oct. 14, 1970, 95477

Int. Cl. H01h *85/04*

U.S. Cl. 337—159 **3 Claims**

A quick acting current limiting, high voltage fuse comprising a tubular casing made of an insulating material; one or more relatively long fusible elements wound helically on an insulating core which is located inside the casing coaxially therewith; a pair of metallic terminals which close the ends of the casing and are connected to the ends of the fusible elements; and a granular arc extinguishing material which completely fills the casing and embeds the elements and core. Each element consists of a very thin, narrow and long strip of a fusible metal such as silver having along its length in one edge a plurality of spaced notches made by cutting out small segments of strip. Each notch appears in outline on the flat side of the strip as an arc of a circle. These notches define regions of reduced cross section for initiating fusion of the strip. Their configuration and arrangement reduces the tendency of the arcs to run together as they enlarge. Their presence also



produce a rapid rise in arc voltage, short melting time, and low I^2t.

3,801,946

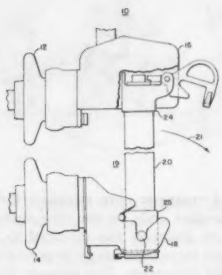
DROPOUT FUSE ASSEMBLY INCLUDING IMPROVED CURRENT LIMITING FUSE STRUCTURES

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1973, Ser. No. 344,015

Int. Cl. H01h *71/10*

U.S. Cl. 337—175 **10 Claims**



A current limiting fuse structure including a latch tripping means or device disposed within the housing of said fuse structure or assembly. The latch tripping device comprises a spring-loaded plunger which when actuated moves through an end ferrule of the fuse housing to thereby trip a latch in the fuse assembly which normally latches the fuse housing in place in one of the fuse assembly terminals. Two operating conditions must both exist simultaneously before the plunger is actuated to unlatch the fuse housing. First, a portion of current sensitive fusible wire disposed in the tripping device to prevent the plunger therein from moving into a tripping position must be blown to thereby allow the plunger to move, and second, the current flowing through the fuse must be substantially zero so that no arc is maintained between the fuse housing ferrule as it swings or moves away from the latching assembly and the stationary part of the overall fuse assembly. This is done by providing an electromagnet in series circuit relationship with the main fuse element so that when the current through the main fuse element is zero, the current through the electromagnet is also zero, and, consequently, an override means which normally

prevents the plunger from moving into a position to disengage the latch is actuated. The override means may comprise a spring-loaded shutter which is held in a first position by the electromagnet when current flows through the electromagnet, but which moves to a second position when the current ceases to flow through the electromagnet thus freeing the plunger to engage in an unlatching operation. In another example, the electromagnet may cause contacts to close when deenergized. These contacts are connected in series circuit relationship with the previously described fusible wire which, in turn, holds the plunger in place. When the contacts are closed, the fusible wire blows or melts, thus freeing the plunger for an unlatching operation.

3,801,947

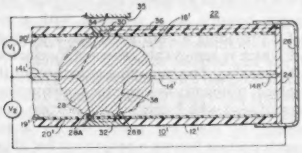
ELECTRIC FUSE WITH IMPROVED CASING

Donald D. Blewitt, Pittsburgh, and Frank L. Cameron, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1971, Ser. No. 115,196

Int. Cl. H01h *85/14*

U.S. Cl. 337—246 **6 Claims**



An electric fuse structure comprising a generally tubular electrically insulating or dielectric casing in which a fusible element is disposed and which is substantially filled with a finely divided or pulverulent arc extinguishing material, such as quartz sand. The casing is coated on its inner surface with a thin layer of ceramic electrically insulating material. The ceramic material hardens in place to form a relatively thin insulating liner.

3,801,948

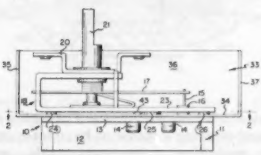
THERMOSTATIC CONTROL STRUCTURE

E. Franklin Heiser, and Andrew Kulick, both of Columbus, Ohio, assignors to Ranco Incorporated, Columbus, Ohio

Filed Mar. 7, 1973, Ser. No. 338,836

Int. Cl. H01h *37/04*

U.S. Cl. 337—380 **5 Claims**



A bimetal strip operated control comprises a switch housing and a frame supporting the strip and rigidly attached to the housing with an appreciable air gap between the housing proper and the frame. A plate of insulating material of the type which is dimensionally affected by its moisture content is disposed in the gap between the housing and frame so as to provide electrical insulation intermediate the switch terminals, projecting from a side of the housing, and the frame. The spacing of the frame from the housing proper and the thickness of the insulation member is such as to permit expansion and contraction of the insulation member without affecting the spatial relationship of the frame, including the bimetal strip, and housing.

3,801,949

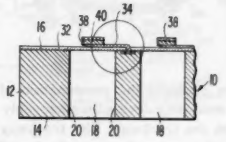
THERMAL DETECTOR AND METHOD OF MAKING THE SAME

Robert Dean Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,212

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 R **7 Claims**



A thermal detector includes a flat substrate of a semiconductor material having opposed surfaces and at least one opening extending through the substrate between the opposed surfaces. Electrical compositions are formed in the substrate at one of the opposed surfaces and provide a desired electrical circuit. A layer of an electrical insulating material having a thermal resistance to the flow of heat along the plane of the layer is on the one surface of the substrate and extends over the opening in the substrate. At least one body of a thermally sensitive material is on the layer and is positioned only over the opening in the substrate. The thermally sensitive body is electrically connected to the electrical components in the substrate.

3,801,950

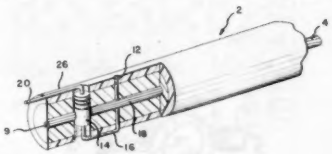
IGNITION CABLE HAVING PREDETERMINED RESISTANCE

Joseph Agusta Wise, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 27, 1973, Ser. No. 374,158

Int. Cl. H01c *1/06*

U.S. Cl. 338—66 **6 Claims**



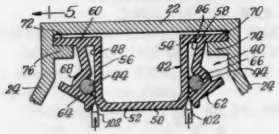
Ignition cable for spark ignition engine comprises an insulated cable with a metallic conducting core. A large diameter hole extends transversely through the cable adjacent to one end and a resistor is positioned in this hole. One lead from the resistor extends from the hole rearwardly along the surface of the cable, thence radially into the cable and contacts the core. The other lead extends from the hole towards the end of the cable. A terminal crimped onto the end of the cable is in electrical contact with the other lead so that the resistor is in series with the conducting core of the cable.

3,801,951

TRACK LIGHT SYSTEM

Wayne J. Kemmerer, Jefferson; Vincent C. Dicola, and Gene R. Raddatz, both of Fort Atkinson, all of Wis., assignors to Thomas Industries, Inc., Ft. Atkinson, Wis.

Filed Oct. 24, 1972, Ser. No. 300,197
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R **5 Claims**



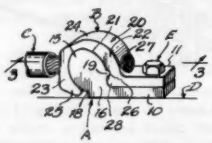
This invention discloses the combination of an elongated trackway and a mounting device for removably connecting an electrical unit to the trackway. The trackway comprises an elongated channel member having a back wall and two side walls with a pair of corresponding in-turned flanges formed at the outer ends of the two side walls to present a lengthwise slot. An elongated insulative member is mounted within the channel member and includes a pair of spaced apart receptacles in alignment with the lengthwise slot. A pair of conductors extend through each receptacle lengthwise of the channel member. The mounting device is assembled in a hollow housing having an open end. A plug unit is inserted in the open end, and includes an insulative head member mounted within the open end and a pair of contact blades extending through the insulative head member outwardly of the open end in a spaced apart relation corresponding to the distance between the pair of receptacles. The mounting device further includes latching means extending forwardly of the housing's open end for engaging the in-turned flanges of the channel member upon the contact blades being inserted into the pair of receptacles to hold the mounting device in place, and includes releasing means which selectively disengages the latching means to permit the removal of the mounting device from the trackway.

3,801,952

CABLE CLAMP WITH LOCKING MEANS

Robert E. Lawlor, Huntington Beach, Calif., assignor to Electro-Clamp Corporation, Beverly Hills, Calif.

Filed Oct. 30, 1972, Ser. No. 302,136
Int. Cl. H01r 9/10
U.S. Cl. 339—266 R **10 Claims**



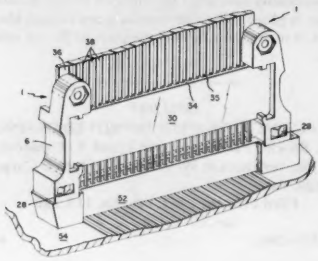
A connector of the hinging clamp type, with alignable bores to receive the end of a cable (e.g. conductor) which is securely clamped between the jaws when they are rotatably adjusted to closed position, is provided with mating locking rib and keeper notch in which the rib is received in the closed position, thus to lock the jaws in securely gripping engagement with the conductor.

3,801,953

MOUNTING STRUCTURE FOR A CONNECTOR HOUSING

James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 12, 1971, Ser. No. 198,325
Int. Cl. H01r 13/62
U.S. Cl. 339—65 **17 Claims**



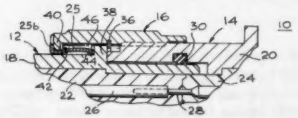
The invention relates to a method and apparatus for mounting a connector housing to a substrate with a mounting bracket and for providing a card guide for a printed circuit board or card which is removably received by electrical contacts within the housing. The mounting structure for the housing is of one-piece, resiliently deformable construction having a pair of opposed jaws which grip an end portion of the connector housing. The jaws are connected by a resiliently deformable neck portion having a projection for aligning the jaws in position on the connector end portions and cooperating with the jaws to prevent accidental removal of the mounting bracket. A card guide channel is optionally provided on the mounting bracket. The mounting bracket is removably attached to the connector housing end portion without a need for separate fasteners.

3,801,954

COUPLED ELECTRICAL CONNECTOR WITH HEAT-ACTIVATED MEMORY LOCKING MEANS

Robert F. Dorrell, Des Plaines, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 28, 1972, Ser. No. 310,058
Int. Cl. H01r 13/54, 13/20
U.S. Cl. 339—90 R **14 Claims**



An electrical connector comprised of a plug and receptacle coupled together using a screw or bayonet-type coupling and additionally including a heat-activatable, generally ring-shaped locking memory member made of a specially chosen memory alloy, such as 55-Nitinol. The locking memory member is provided with original and intermediate shapes chosen for coaction with predetermined opposed annular surfaces provided on the plug and receptacle so that the application of moderate amounts of heat causes the locking memory member to rigidly lock the plug and receptacle in coupled engagement. The locking memory member additionally includes memory indicating tabs for providing an externally visible indication of the locking provided by the locking memory member.

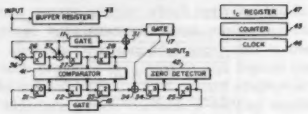
ERRATUM

For Class 340—95 R see:
Patent No. 3,800,430

3,801,955
CYCLIC CODE ENCODER/DECODER

Thomas Harold Howell, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 13, 1971, Ser. No. 207,209
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL 5 Claims

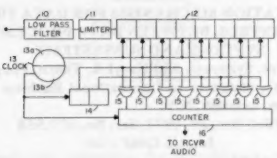


A cyclic code decoder is provided which has a feedback shift register organized in two sections which together form a cyclic code encoder. The first section has a gated feedback connection in accordance with the polynomial $x^c + 1$. The second section is selectively connected in series with the first section and has gated feedback connections for the polynomial $P_1(x)$. Additional feedback connections are provided for the first section, in accordance with the polynomial $P_1(x)$ and these feedback connections are selectively connected in series with the feedback to the second section of the shift register. A zero detector, comparator and counter are provided for error detection and identification as a factored polynomial.

3,801,956
DIGITAL SEQUENCE DETECTOR USING MULTIPLE SAMPLES DURING EACH DIGIT TIME PERIOD

William V. Braun, Chicago, and Eugene J. Bruckert, Arlington Heights, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 134,932, April 19, 1971, abandoned.
This application Mar. 12, 1973, Ser. No. 340,153
Int. Cl. G06f *7/02*
U.S. Cl. 340—146.2 30 Claims

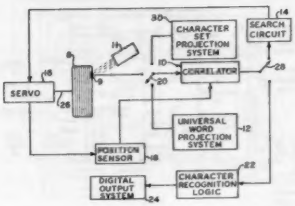


An asynchronous detector for detecting a binary word within a train of signals, wherein the train of signals and the binary word each contain bits, and each bit has a predetermined period. The detector includes a clock which develops a number of clock pulses within the time inverval of a bit period. The train of signals is coupled to the input of a shift register which is responsive to each clock pulse to shift the contents of each stage in the shift register, and enter a binary signal, corresponding to the signal in the train of signals coupled to the input, into the first stage. A memory circuit stores a binary word corresponding to the binary word to be recognized. A comparison circuit compares the binary signals in the shift register and the binary word in the memory circuit between clock pulses. If a predetermined number of correlations occur between the memory circuit contents and the shift register contents, the comparison circuit will develop a detection signal.

3,801,957
AUTOMATIC TIRE CODE READER

James J. Hogan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 14, 1972, Ser. No. 280,290
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3 F 11 Claims

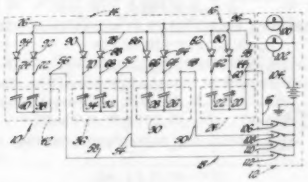


Disclosed is an automatic code reading system capable of automatically reading and formating for further use the identifying code contained on a particular item. The system is capable of ascertaining the identity of codes which are readily ascertainable by view of the human eye. Basically the invention teaches the use of a magnetically focused and deflectable electronic image storage tube to receive the image of the identifying code and compare that image with known images so as to effect an output of the image storage tube which will be indicative of the character of the code. The invention further provides a means for receiving the output of the image storage tube and converting that output into a format which may be readily used by peripheral equipment. Particularly, the invention teaches a digital output equivalent of the identifying code.

3,801,958
DATA ACQUISITION INTERFACE

Richard W. Simmons, and Stanley A. Berry, both of Ann Arbor, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1972, Ser. No. 294,427
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 G 4 Claims



A data acquisition interface unit for interconnecting hard contact switches and other similar binary data sources to a data receiving station, such as a digital computer. The interface comprises a panel having data source input terminals organized into word groups of several bits each and an address terminal and common terminal for each word. Address selection means are provided for connecting the common terminal of each word to system ground in a sequential fashion thereby to systemmatically transfer data from each of the word groups to the data receiving station. Isolator diodes are connected in a hard-wired data communication path so as to prevent data

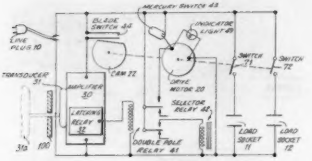
errors arising out of the existence of several closed switches in a nonaddressed word.

3,801,959

REMOTE-CONTROLLED TWO-POSITION ACTUATOR

Gerard J. O'Brien, 33 Pamrapo Ave., Jersey City, N.J.

Filed Feb. 27, 1973, Ser. No. 336,188
Int. Cl. G08b *3/10*
U.S. Cl. 340—148 **10 Claims**



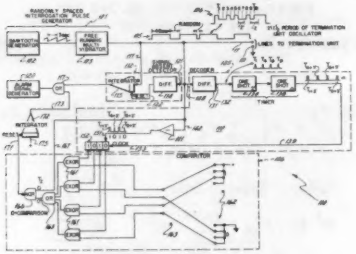
An actuator capable of selectively breaking or making either, or both, of a pair of electrical circuits, in response to audio signals generated by a hand-held whistle, is provided with a transducer sensitive to the emitting frequency of the whistle, an amplifier for the signal generated in the transducer and a motor-driven ram, whose cycle is initiated by the transducer signal, adapted to actuate one of two maintained position switches in the aforementioned pair of electrical circuits. The ram operates the first of said switches whenever the number of audio pulses received by the transducer during its receptive period is odd, for example one; it operates the second of said switches whenever the number of such pulses is even, for example two.

3,801,960

NIGHT DEPOSITORY LINE SECURITY

Richard C. Edwards, Brookfield, Conn., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed July 21, 1972, Ser. No. 273,839
Int. Cl. G08c *15;* **H04q** *9/00*
U.S. Cl. 340—151 R **17 Claims**



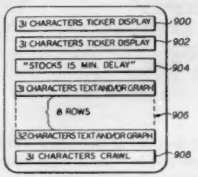
A line security system for use in intruder alarms for bank night depositories and the like. A termination unit at the secured premise responds to randomly spaced interrogation signals sent over lines from a central unit to generate return signals synchronized to the random signals. The termination unit includes an oscillator driven counter which sequentially emits pulses coded by the plugboard. An inhibit circuit stops the oscillator at the end of each response signal cycle. The termination of the interrogation pulse resets the counter to insure that it remains synchronized with a decoder at the central unit, and also disables the inhibit circuit so that the next interrogation pulse may restart the oscillator. The termination unit is powered by energy derived from the interrogation pulses and stored in a capacitor. The central unit sounds an alarm when no response signal occurs or after receipt of several successive response signals of improper or unsynchronized code.

3,801,961

SYSTEM FOR PROVIDING A VIDEO DISPLAY HAVING DIFFERING VIDEO DISPLAY FORMATS

Thomas R. Coombe, Berlin, N.J., assignor to Reuters Limited, London, England

Filed May 21, 1971, Ser. No. 145,858
Int. Cl. G06f *3/14*
U.S. Cl. 340—154 **21 Claims**



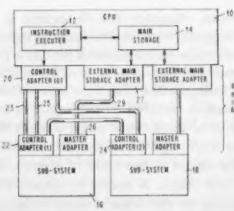
A system for providing a video character display containing at least two different types of video display formats which are comprised of independently self-generated digital-to-video scan signals. These scan signals are combined to provide a composite video signal which, when supplied to a television display device which utilizes a raster scan-line pattern, provides the various video display formats in different scan-line areas of the display screen. Each of the display formats is individually controllable. The various types of display formats which are provided include a ticker display, a text and/or graph display, and a crawl display. Means are provided for controlling the movement of the character display across the screen so as to vary the rate of movement of the character display across the screen in accordance with the rate of information input to the system. In this manner, a smooth video display format is provided at all input rates. Each display format comprises a plurality of character spaces and the system determines the character to be displayed in the given space on a space-by-space basis.

3,801,962

COMMUNICATION MECHANISM FOR DATA TRANSFER AND CONTROL BETWEEN DATA PROCESSING SYSTEMS AND SUBSYSTEMS

Brian B. Moore, Syracuse, and Caryl A. Thorn, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,958
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **4 Claims**



Apparatus for establishing and maintaining communication between a number of different types of subsystems of a data

processing system. The apparatus contains elements which are subsettable with respect to the various functions which are performed depending upon the characteristics of each of the subsystems which are connected together.

One function is that of attaching process control devices to a central processing unit. These devices are characterized by having simple interfaces, by involving non-terminating operations, by having high storage access rates and by time dependencies.

A further function is that of inter-CPU signalling involving the transfer of small amounts of information.

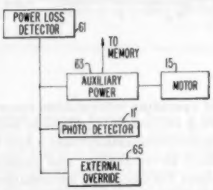
A further function is that of sharing main storage between a CPU and a subsystem element.

The communication apparatus is comprised of two separate and functionally independent logical elements. The first is an external main storage adapter which performs the function of sharing storage between the central processing unit and a subsystem element. The second logical unit is the control adapter which provides the physical and logical connection between the subsystem units. The control adapter attaches to a control interface which contains a polling mechanism, a selection mechanism, a general bus, and several interlocked communication tag lines. A control transfer sequence is defined by the interface such that each attached subsystem may initiate communication with any other attached subsystem. A polling mechanism allocates temporary control of the interface to a unit desiring to initiate communication A selection mechanism allows selective subsystem-to-subsystem communication.

3,801,963
METHOD AND APPARATUS FOR TRANSFERRING DATA FROM A VOLATILE DATA STORE UPON THE OCCURRENCE OF A POWER FAILURE IN A COMPUTER

Kun-Chao C. Chen, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 28, 1972, Ser. No. 292,968
Int. Cl. G06f *11/00, 13/04*
U.S. Cl. 340—172.5 **17 Claims**

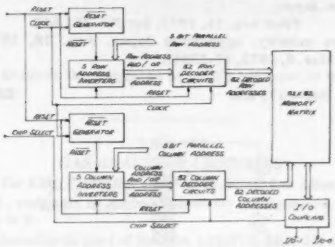


A method and apparatus for transferring data from or between computers in a data processing system, such method utilizing a circuit controlled tape cartridge containing a magnetic tape. One specific application of the disclosed data transfer technique arises upon failure of a computer having volatile data storage, such failure resulting either from internal malfunctioning or from a power failure. Upon the occurrence of these types of failures in computers having volatile memories, the contents of the failing computer's memory can only be preserved by immediate transfer to some extraneous form in which it may be stored and later reapplied, as by transferring memory content to a tape cartridge for subsequent reading into the memory of a back-up computer or for re-entry into the memory of the failing computer upon correction of the malfunction or allevation of the power failure. It is to this particular data preserving need of volatile memory computers that the method and apparatus of the present invention is particularly directed.

3,801,964
SEMICONDUCTOR MEMORY WITH ADDRESS DECODING

Thomas Laszlo Palfi, Cupertino, and James Millard Oliphant, San Jose, both of Calif., assignors to Advanced Memory Systems Inc., Sunnyville, Calif.

Filed Feb. 24, 1972, Ser. No. 229,144
Int. Cl. G11c *7/00, 7/06*
U.S. Cl. 340—173 R **11 Claims**

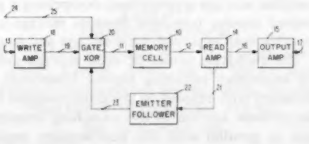


A dynamic semiconductor memory, including a memory addressing system, using field effect devices, for rapidly decoding an address signal, for addressing the memory matrix, and providing a differential output on a pair of sense lines in accordance with the state of the addressed memory cell. The system is comprised of three basic addressing circuits operating in conjunction with a reset signal and clock signal to address one of the memory cells in the memory. The first circuit generates a reset signal which is the modified inverse of the reset signal for use in the second circuit. The second circuit is an address inverter, used in plurality, each of which presents one bit of the multiple bit address together with an inverse thereof, and serves as a register for the signal for application to the decoder circuit. The third circuit is a decoder circuit, used for each row and each column of the memory matrix, which receives the address and/or address signal and provides a clocked, decoded address signal output. The decoded row address couples each memory cell in the respective row to a pair of precharged column cell lines, and the decoded column address couples one respective pair of the column cell lines to the sense lines, whereby a chip select signal (the column "clock" signal) may be used to couple the sense lines to the I/O (input-output) lines. Refresh and write operations are described.

3,801,965
WRITE SUPPRESSION IN BIPOLAR TRANSISTOR MEMORY CELLS

Guenter Keller, Boeblingen, and Ulrich Olderdissen, Sindelfingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,729
Claims priority, application Germany, July 16, 1971, 2135625
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **10 Claims**



A circuit is described to suppress or inhibit the driving of bipolar transistors in a memory cell or cells into saturation

when a like instruction is already stored in the storage cell or cells. Suppression is accomplished by comparing the information stored in the storage cell with the information applied to the input of the cell, whereby writing is permitted to proceed if the information is not identical and inhibited such if the information is identical.

3,801,966
OPTICAL MEMORY DEVICE

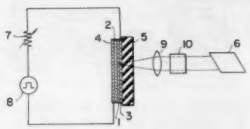
Motoyasu Terao, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 18, 1972, Ser. No. 281,660

Claims priority, application Japan, Aug. 18, 1971, 46-62331; Mar. 8, 1972, 47-23085

Int. Cl. G11c *11/42, 13/04*

U.S. Cl. 340—173 LM **22 Claims**



An optical memory device comprising a compound film formed of two materials adjacent to each other; one material being such that its threshold voltage of current controlled differential negative resistance decreases with the light applied, and the other being an amorphous chalcogenide system. This amorphous chalcogenide system includes a substance selected from the group consisting of chalcogenide systems As-Te-Ge, Te-Ge-Sb-S, Te-Ge-S-As, Te-Ge-S-P, Te-Ge-Sb, Te-Ge-Sb-As, Se-Te-Ge, and S-Se-Te, and Zn-As. When a voltage is applied across said compound film, and a specific area of the compound film is irradiated by light, changes are introduced into the amorphous chalcogenide and thus a memory is fixed therein. The device is further characterized in that the material of which the threshold voltage of current controlled differential negative resistance decreases with the light applied, is a control material selected from the group consisting of CdS, CdSe, ZnSe, CdTe, SiO, Nb_2O_5, TiO_2, SbSI, $PbZrO_3$, NiO, VO_2, Fe_2O_3 doped with 1–20% Cu, Fe_3O_4, MoO, TiO_2, Cu_2O, yttrium iron garnet doped with silicon Si and also the amorphous chalcogenide systems As-Te-Ge-S, As-Te-Ge-Si, and As-Te-Ge. Also, avalanche photodiode and light actuated silicon controlled rectifier (LASCR) having the same property can be used as the control materal.

3,801,967
MONOLITHIC BIPOLAR TRANSISTOR STORAGE ARRANGEMENT WITH LATENT BIT PATTERN

Horst Heinz Berger, Sindelfingen; Knut Najmann, Gartringen; Hansgeorg Pietrass, Dettenhausen, and Siegfried Wiedmann, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

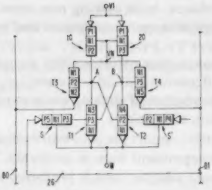
Filed Feb. 12, 1973, Ser. No. 331,430

Claims priority, application Germany, June 30, 1972, 2232189

Int. Cl. G11c *11/40, 13/00;* **H03k** *3/281*

U.S. Cl. 340—173 FF **8 Claims**

A monolithic storage arrangement comprising a plurality of cross-coupled bipolar transistor bistable storage cells selectively operable both as a read-write storage and as a read-only storage. The switching nodes of each storage cell are connected to respective switching bipolar transistors which are complementary with respect to the cross-coupled transistors, the collector-base section of the switching transistors being connected in parallel with the base-emitter section of the respective cross-coupled transistors. For read-only operation, the emitter of one of the switching transistors is connected to a control line with the emitter of the other switching transistor remaining unconnected in accordance with predetermined fabrication personalization. The connected switching transistor injects current into the base of its associated cross-coupled transistor when the control line is suitably energized to place the cell into a desired read-only state. Both switching transistors are deactivated during read-write operation.



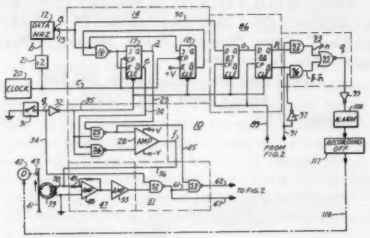
3,801,968
WRITE-READ CHECKER

John L. Way, La Canada, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 10, 1972, Ser. No. 216,677

Int. Cl. G11b *5/46*

U.S. Cl. 360—40 **11 Claims**



A method of operating information recording and playback apparatus having recording equipment including an encoder for encoding input information from a first form into a second form preparatory to recording, and playback equipment including a decoder for decoding information from the second form to the first form upon information playback. According to this method, the information is encoded from the first form to the second form with the encoder in the recording equipment and is recorded in the second form. During information recording, information is decoded from the second form to the first form with the decoder in the playback equipment and a discrepancy between the information decoded from the second form to the first form and the input information in the first form is detected and acted upon.

Apparatus for practicing this method are also disclosed.

3,801,969
ERASE FEATURE FOR DATA RECORDING DEVICE

Frank J. Sordello, San Jose, and Kent A. Salmond, Los Gatos, both of Calif., assignors to Itel Corporation, San Francisco, Calif.

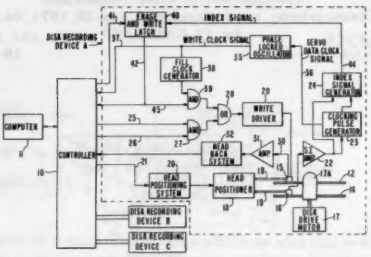
Filed July 24, 1972, Ser. No. 274,339

Int. Cl. G11b *5/02, 19/02*

U.S. Cl. 360—39 **7 Claims**

This invention relates to a method of recording data and more specifically to apparatus for recording data wherein a

control unit is utilized to regulate a data recording device and the data recording device is provided with means for accomplishing independently certain of the writing tasks in a manner to free the controller for other tasks.



3,801,970

SIGNAL TRANSLATING CIRCUIT AND METHODS FOR HANDLING UNIDIRECTIONAL INPUT SIGNALS

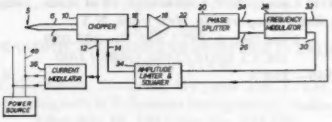
Alan G. Barnes, Hounslow, England, assignor to Wilkinson Sword Limited, London, England

Filed Feb. 25, 1972, Ser. No. 229,353

Claims priority, application Great Britain, Mar. 19, 1971, 7419/71

Int. Cl. G08b *21/00; G01r 13/04*

U.S. Cl. 340—228 R **9 Claims**



The unidirectional output voltage from a thermocouple is chopped to produce a corresponding alternating signal which is then amplified and fed to a frequency modulator. The latter produces an output signal whose frequency is dependent on the magnitude of the alternating signal from the chopper, and this output frequency is superimposed on power supply lines for transmission to a distant point. In addition, the output frequency from the frequency modulator is used to drive the signal chopper so as to maintain the alternating signal from the chopper continuously in phase with the operation of the frequency modulator.

3,801,971

TELEPHONE ALARM SYSTEM

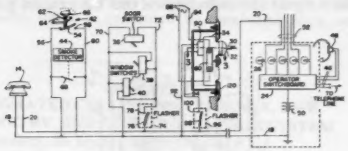
Joseph L. Stendig, 2500 Riverside Dr., and Claude A. Davis, 568 Piney Forest Rd., both of Danville, Va.

Continuation-in-part of Ser. No. 209,180, Dec. 17, 1971, abandoned. This application Oct. 11, 1972, Ser. No. 296,612

Int. Cl. G08b *19/00*

U.S. Cl. 340—220 **12 Claims**

An alarm system is disclosed having a condition responsive means therein which completes a circuit through a telephone and an auxiliary telephone ringing power supply upon the occurrence of an alarm condition. The circuit includes an interrupter to cause the telephone to ring in response to the alarm condition.



3,801,972

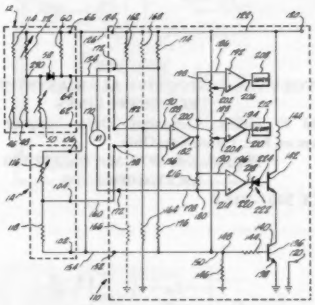
GAS ANALYZER CIRCUITRY

Young Ho Kim, Palo Alto, and Neil M. King, Los Altos, both of Calif., assignors to Ambac Industries Incorporated, Garden City, N.Y.

Continuation-in-part of Ser. No. 155,973, June 23, 1971, abandoned. This application Oct. 26, 1972, Ser. No. 301,207

Int. Cl. G08b *21/00*

U.S. Cl. 340—237 R **20 Claims**



Apparatus for detecting and indicating the presence of substances such as smoke and combustible gasses. One or more detectors generate output signals which are applied to a comparator amplifier. The magnitude of the detector output signals varies unidirectionally as a function of the concentration detected. The comparator amplifier output varies unidirectionally as a function of the difference in magnitude of the detector signals. Failure detection circuitry is included which detects failure to actuate the detectors or failure of the detectors to apply their output signals to the comparator. Apparatus test circuitry is provided which is independent of the detector elements and may be preselected during testing to not actuate any safety circuits or latching relays which the apparatus may control. In a preferred embodiment, circuitry is utilized to automatically compensate for detector sensor drift or for long term concentration changes, so that only large rapid changes in concentration are detected.

3,801,973

EMISSION SENSOR

John L. W. Grabiel, Flushing; Mark N. Culver, Davison, and Edwin Albert Larenz, Flint, all of Mich., assignors to General Motors Corporation, Detriot, Mich., by said Gabriel

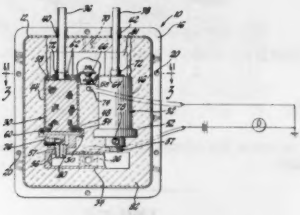
Filed Dec. 4, 1972, Ser. No. 311,923

Int. Cl. G08b *21/00*

U.S. Cl. 340—237 R **6 Claims**

This invention relates to gas sensors and more particularly to an exhaust gas sensor used in conjunction with automobile

engine internal combustion engine exhaust systems. The sensor is generally an independent self-contained unit having means adapted to be directly or indirectly connected to the exhaust stream on the downstream side of a converter to provide a signal and an indication that the exhaust gas emissions



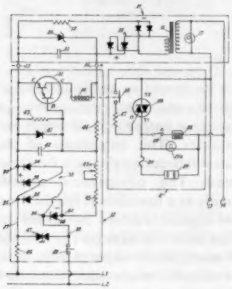
passing through the converter have reached an undesirable pollutant emissions level and that the converter is therefore not functioning properly. The sensor is constructed so it can be independently mounted anywhere on the automobile but the preferred location is downstream of, and adjacent to, the catalytic converter.

3,801,974

VOLTAGE RESPONSIVE ALARM SYSTEM FOR TELEPHONE LINES

Donald F. Aitken, Columbus, Ohio, assignor to Applied Sciences, Inc., Columbus, Ohio

Filed Mar. 6, 1972, Ser. No. 232,100
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 B **9 Claims**



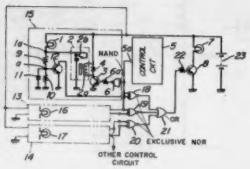
An electrical alarm system is provided for responding to a telephone communication line normally having an operating voltage of predetermined magnitude to indicate loss of or removal of this voltage. This system includes an electrical power supply for energizing alarm apparatus independently of the telephone communication line voltage and a switching circuit responsive to the line voltage and operable to interconnect the power supply and alarm apparatus for energization thereof when the telephone communication line voltage has been removed or otherwise eliminated. The switching circuit includes a solid state switching device that is normally biased to a non-conducting state through a biasing circuit having voltage limiting and regulating means and a full wave rectifier.

3,801,975

LAMP FAILURE DETECTING SYSTEM

Akira Kitano, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Jan. 26, 1972, Ser. No. 221,003
Claims priority, application Japan, Jan. 28, 1971, 46-2917
Int. Cl. G08b *21/00*
U.S. Cl. 340—251 **10 Claims**



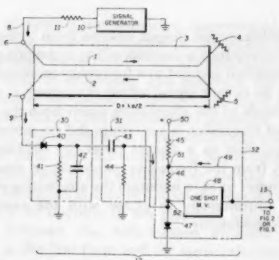
A lamp failure detecting circuit for use with at least one lamp and an electric source, in which the lamp is actuated/deactuated by driving means in response to a control signal produced by means including a changeover switch for changing the level of the control signal between first and second levels, the lamp being adapted to be actuated/deactuated when the control signal has the first/second level respectively; and the failure of the lamp is detected by a logic circuit when the control signal has the second level and, at the same time, when a detecting means detects not presence of the electrical potential of the electric source through the lamp, so that the occurrence of the failure is indicated by an indicating means.

3,801,976

TRANSMISSION LINE PRESENCE SENSOR

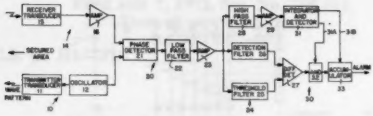
Gerald F. Ross, Lexington; Joseph D. DeLorenzo, Sudbury, and David Lamensdorf, Cambridge, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,089
Int. Cl. G01s *11/00*; G08b *13/00*
U.S. Cl. 340—258 R **4 Claims**



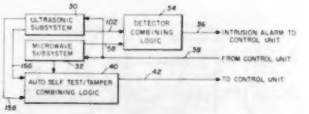
A high frequency generator-receiver system for detecting the presence or proximity of objects including persons or vehicles employs continuous wave transmission of high frequency electromagnetic signals and reception thereof with respect to a transmission line energy coupling system by a receiver circuit cooperating with the transmission line coupling system for detecting changes in the coupled signal energy and for providing corresponding outputs suitable for indication or other reaction to the presence of such proximate objects.

3,801,977
ULTRASONIC ALARM CIRCUIT
William L. Cotter, Beverly, Mass., assignor to Gulf & Western Manufacturing Company (Systems), New York, N.Y.
Filed Dec. 7, 1971, Ser. No. 205,599
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 A **32 Claims**



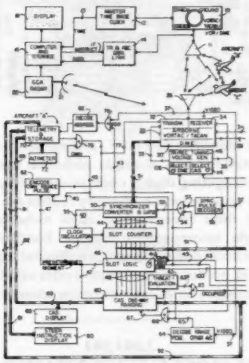
The circuit is preferably located within an area that is to be secured, is of the type that transmits an ultrasonic signal to establish an ultrasonic wave pattern in the area, and includes doppler phase detection circuitry responsive to both the transmitted and received ultrasonic signals for providing a doppler signal of a frequency corresponding to the velocity of motion in the area. In one embodiment the circuit includes a threshold filter and a detection filter each having different frequency responses, both coupling to separate inputs of a differential detector, an output accumulator circuit coupled from the differential detector, and a high pass filter for inhibiting the output accumulator circuit upon receiving signals of above a predetermined frequency, but inhibiting the accumulator for only up to a preselected time interval. In another embodiment of the invention the circuit includes, in addition to a threshold filter, detection filter, differential detector, and output accumulator circuit, a separate cancel channel and associated receiver transducer responsive preferably to higher frequency noise signals at frequencies just below the frequency of the transmitted ultrasonic signal to inhibit the output accumulator upon receipt of such signals but only for a preselected time interval.

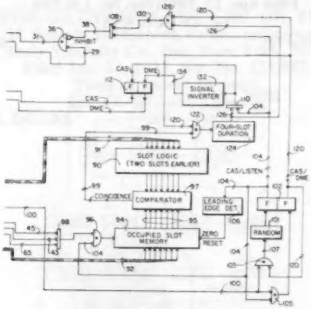
3,801,978
ULTRASONIC-MICROWAVE DOPPLER INTRUSION ALARM SYSTEM
David N. Gershberg, Rockville, Md., and Alex Y. Lee, Arlington, Va., assignors to E-Systems Incorporated, Dallas, Tex.
Filed July 20, 1972, Ser. No. 273,596
Int. Cl. G08b *13/16, 29/00*
U.S. Cl. 340—258 A **24 Claims**



Motion within a large specified volume is detected by multiple ultrasonic transducer assemblies with a redundant microwave antenna to reduce false alarms. Each of the ultrasonic transducer assemblies contains a plurality of highly directive transmitting radiating elements and/or a plurality of highly directive receiving elements. Combining networks interconnect the various radiating elements in parallel to a frequency source. The microwave transducer includes a transmit/receive antenna coupled to a microstrip oscillator through a microstrip balanced mixer. Signals from the ultrasonic transducers are processed by means of time integration to provide an alarm signal. Similarly, signals received at the microwave antenna are processed by means of time integration to provide an alarm signal. Alarm signals from both the ultrasonic subsystem and the microwave subsystem are combined in logic that responds to generate a system alarm only upon the simultaneous existence of alarm signals from both sources. Also coupled to the ultrasonic subsystem and the microwave subsystem is an automatic self-testing and tamper determining system. When either transducer source indicates a fault condition, an alarm signal is generated by combining logic networks.

3,801,979
INTEGRATED COLLISION AVOIDANCE, DME, TELEMETRY, AND SYNCHRONIZATION SYSTEM
John P. Chisholm, 16 Joy St., Boston, Mass.
Filed Apr. 26, 1972, Ser. No. 247,586
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 LC **12 Claims**





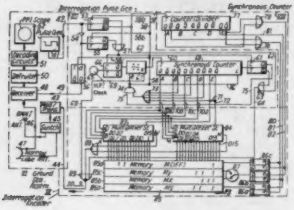
A time-sharing cyclic time slot system in which DME range measuring functions, collision avoidance functions, clock synchronization functions and/or data telemetry functions are all combined into an integrated repeating time sharing cycle in a non-interfering manner to achieve either general navigation and traffic control, or else stationkeeping, by the orderly exchange of pulse signals between participating ground stations and/or aircraft, and in which the cost of the system is minimized by using already existing ground and/or airborne VORTAC/TACAN/VOR/DME equipment and tuning the airborne transmitters and receivers in an agile manner to the various frequencies assigned for the performance of the above functions.

3,801,980

SECONDARY RADAR SYSTEM FOR TIME-SHARED TARGET IDENTIFICATION

Jacques J. Danton, Versailles; Albert A. Janex, Cachan, and Gerard G. Martin-Garin, Fresnes, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,784
Claims priority, application France, Sept. 14, 1971, 71.33015
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC 4 Claims



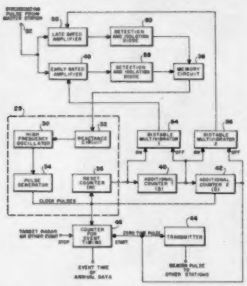
An aircraft identification (IFF) system involving ground interrogating stations and multiple airborne transponders. At least one interrogating digital code preceded by a synchronizing pulse sets up a sequence whereby replies are transmitted in the order of their reception at each airborne transmitter. Thus, multiple interrogation can be handled with higher response probability than heretofore. Digital logic is provided for selection of predetermined reply codes and their order and time of transmission from each airborne transponder.

3,801,981

REMOTE CLOCK SYNCHRONIZATION SYSTEM

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1971, Ser. No. 136,989
Int. Cl. G01s 9/56
U.S. Cl. 343—7.5 6 Claims



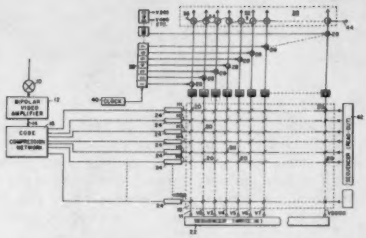
A system for the precise synchronization of high frequency electronic clocks by providing each station other than the master station with a tracking circuit. The tracking circuit consists of an early gate generated just prior to the arrival of the synchronizing pulse from the master station and a late gate generated just after the synchronizing pulse is received from the master station. If the synchronizing pulse received from the master station is either late or early the clock will either speed up or slow down so that it will be in synchronization with the synchronizing pulses received from the master station.

3,801,982

POST STORAGE RANGE AND DOPPLER CORRELATION METHOD AND APPARATUS

Martin R. Richmond, Belmont, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 22, 1968, Ser. No. 723,223
Int. Cl. G01s 9/50
U.S. Cl. 343—9 16 Claims



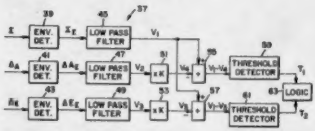
Apparatus is herein disclosed for processing signals by storing and correlating with preset programs. The apparatus is disclosed as it relates to a pulse doppler radar application. Target reflected coded signals modulated by doppler are partly correlated to resolve ranges which are ambiguous with relation to one remaining uncorrelated code. The partly correlated signals are stored in a magnetic core matrix. A series of stitching networks wired (or stitched) for various dopplers are coupled to the core matrix via a series of sense inversion switches which are set by a shift register in accordance with the remaining uncorrelated code. The stitch networks compare the stored code time histories as altered by the sense inversion switches with preset codes representing doppler.

3,801,983

RADAR RECEIVER NOISE RATIO DETECTOR

Richard L. Woolley, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1972, Ser. No. 247,126
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M 6 Claims



A ratio detector circuit which distinguishes between signal-plus-noise input and noise-only input to a radar monopulse receiver. The ratio detector circuitry provides this function for both narrow-band sine wave signals and wide-band contours spectrum signals from source signals within the receiving antenna beamwidth.

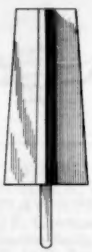
ERRATA

For Classes 354—225, 354—51 and 354—58 see: Patents Nos. 3,800,655, 3,800,683 and 3,800,684

DESIGNS

APRIL 2, 1974

231,052
FROZEN CONFECTION
Durant S. Abernethy, Kansas City, Mo., and Thomas R. Korchak, Shawnee Mission, Kans., assignors to Merritt Foods Company, Kansas City, Mo.
Filed July 7, 1972, Ser. No. 269,601
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

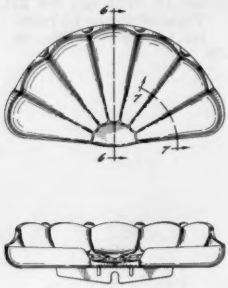


231,053
BELT
Delores Bryant, 936 West End Ave., New York, N.Y. 10025
Filed Nov. 30, 1971, Ser. No. 203,506
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—380

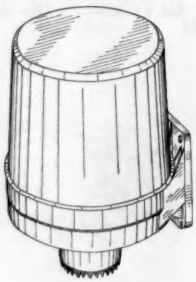
231,054
BASE FOR BATHROOM FIXTURE OR THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Jan. 28, 1972, Ser. No. 221,847
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—86

231,055
BASE FOR BATHROOM FIXTURE OR THE LIKE
Willard H. Sahloff, Bridgeport, Conn., assignor to Handy-Andy Specialty Co., Inc., New York, N.Y.
Filed Jan. 28, 1972, Ser. No. 221,857
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—86

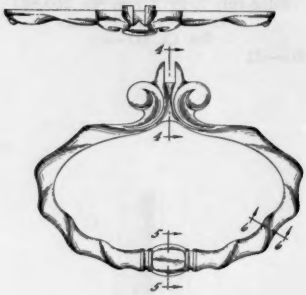
231,056
SOAP DISH
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Oct. 6, 1972, Ser. No. 295,523
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89



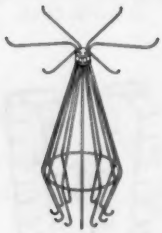
231,057
PAPER ROLL HOLDER OR SIMILAR ARTICLE
Karl Olof Axel Helmer Larsson, Industriestrasse 40, and Lars Lander, Weidstrasse 17, both of 6300 Zug, Switzerland
Filed Mar. 30, 1973, Ser. No. 346,326
Claims priority, application Switzerland Oct. 20, 1972
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



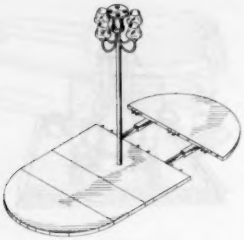
231,058
TOWEL RING
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,332
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



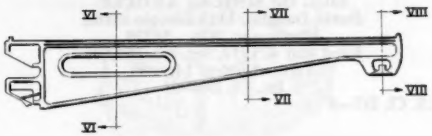
231,059
TOWEL RACK
Ann Sink, 218 Lowell Ave., Palo Alto, Calif. 94301
Filed Apr. 26, 1973, Ser. No. 354,766
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—100



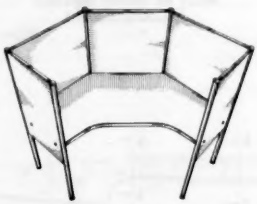
231,060
SUSPENDABLE COMBINED TABLE AND CHANDELIER
Jannette C. Olinger, 4912 N. Sipple, Spokane, Wash. 99206
Filed Oct. 13, 1971, Ser. No. 189,074
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—113



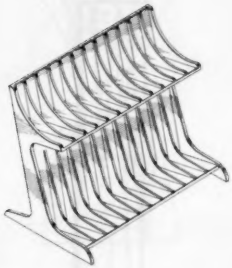
231,061
COMBINATION SLACK, TIE AND COAT DISPLAY SUPPORT
John H. Batts and Judd F. Garrison, Grand Rapids, Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.
Filed Mar. 27, 1972, Ser. No. 238,754
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—116



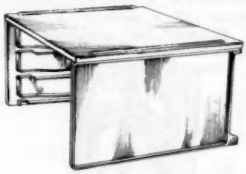
231,062
EDUCATIONAL MODULE
Edward J. Kramer, Rte. 1, Box 846, Clinton, Wash. 98236
Filed Sept. 11, 1972, Ser. No. 287,843
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—157



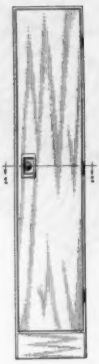
231,063
HOLDER FOR CASSETTES OR THE LIKE
Hormoz Rafaat, 2632 Seaview, Corona del Mar, Calif. 92625
Filed May 1, 1972, Ser. No. 249,481
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190



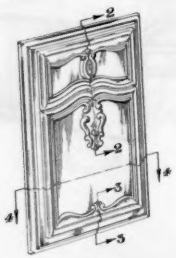
231,064
DRAWER SUPPORT OR SIMILAR ARTICLE
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller Inc., Zeeland, Mich.
Original design application Oct. 26, 1970, Ser. No. 25,677. Divided and this application Jan. 31, 1972, Ser. No. 222,454
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



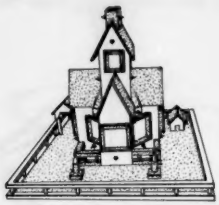
231,065
COMBINED FRAME AND DOOR PANEL FOR A STORAGE LOCKER
Harold P. Lhota and Thomas A. Joseph, North Canton, and Earl P. Leiter, Youngstown, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Feb. 15, 1972, Ser. No. 226,650
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D6—192



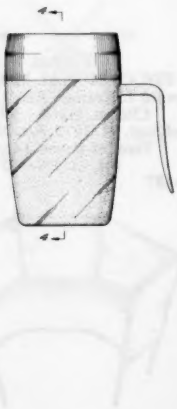
231,066
FURNITURE PANEL OR THE LIKE
Richard M. Chapin, Charlotte, N.C., assignor to Dolly Madison Industries, Huntingburg, Ind.
Filed Apr. 20, 1972, Ser. No. 246,112
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



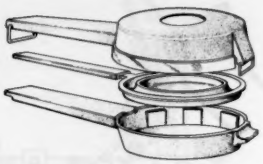
231,067
ILLUMINATED PHOTO DISPLAY DEVICE
Ralph H. Cooper, Rte. 1, Dixon Springs, Tenn. 37057
Filed Aug. 7, 1972, Ser. No. 278,357
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



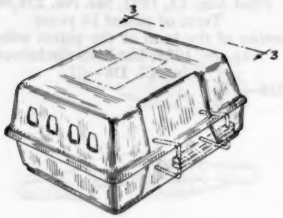
231,068
MUG OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed May 4, 1972, Ser. No. 250,485
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



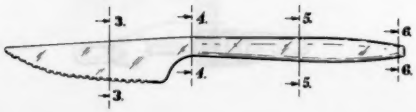
231,069
HAMBURGER COOKER OR SIMILAR ARTICLE
Melvin H. Boldt, Glenview, Ill., assignor to National Presto Industries, Inc., Eau Claire, Wis.
Filed Apr. 17, 1972, Ser. No. 245,023
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



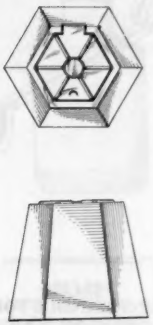
231,070
HOUSING FOR A COOKING APPARATUS
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed May 8, 1972, Ser. No. 251,573
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—109



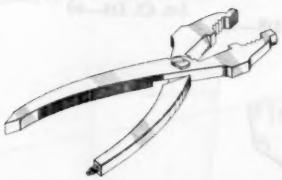
231,071
KNIFE OR SIMILAR ARTICLE OF FLATWARE
Stephen R. Hill, 9313 Catalina, Prairie Village, Kans. 66206
Original design application Sept. 28, 1970, Ser. No. 25,238, now abandoned. Divided and this application May 22, 1972, Ser. No. 255,968
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138



231,072
LITTER RECEPTACLE
Leonard M. Yordon, Daytona Beach, Fla., assignor to Repadco, Incorporated, Daytona Beach, Fla.
Filed Aug. 3, 1972, Ser. No. 277,598
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194



231,073
MULTIPLE-PURPOSE HAND TOOL
William L. Woslum, Norwalk, Calif., assignor to Tanne Patent Enterprises, Inc., Norwalk, Calif.
Filed Aug. 30, 1972, Ser. No. 285,041
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—55

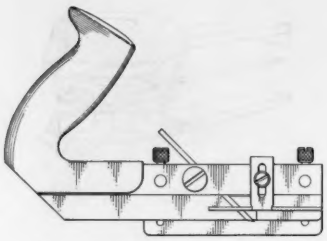


231,074
BOAT PROPELLER REMOVAL TOOL
Gary D. Jones, 3340 E. Washington, Phoenix, Ariz. 85034
Filed Nov. 1, 1971, Ser. No. 194,796
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—88

231,075
ATTACHMENT HANDLE FOR A FILE OR SIMILAR TOOL
Theodore B. Hegler, 804 W. Paul St., Goldsboro, N.C. 27530, and Harold L. Southerland, 208 S. Cromer, Charlotte, N.C. 28208
Filed Aug. 15, 1972, Ser. No. 280,858
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94

231,076
SAW HANDLE
Arne Carlsson, Edsbyn, Sweden, assignor to Edsbyns Industri Aktiebolag, Edsbyn, Sweden
Filed Dec. 22, 1971, Ser. No. 211,163
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—97

231,077
PLANE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, Sheffield, England
Filed Oct. 6, 1971, Ser. No. 187,228
Claims priority, application Great Britain June 23, 1970
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—101

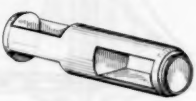


231,078
COMBINATION LOCK FOR BICYCLES OR THE LIKE
Hisashi Saito, Nagoya, Japan, assignor to Kabushiki Kaisha Saikosha Seisakusho, Kasugai, Aichi Prefecture, Japan
Filed Aug. 11, 1972, Ser. No. 279,961
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 10, 1985, has been disclaimed
Int. Cl. D8—*07*
U.S. Cl. D8—114

231,079
COMBINATION LOCK FOR BICYCLES OR THE LIKE
Hisashi Saito, Nagoya, Japan, assignor to Kabushiki Kaisha Saikosha Seisakusho, Kasugai, Aichi Prefecture, Japan
Filed Aug. 11, 1972, Ser. No. 279,962
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 10, 1985, has been disclaimed
Int. Cl. D8—*07*
U.S. Cl. D8—114

231,080
DOOR PROTECTOR PLATE
Frederic C. Bennett and Sandra J. Bennett, both of 61647 Meadowlark Lane, South Bend, Ind. 46614
Filed Feb. 1, 1972, Ser. No. 222,723
Term of patent 7 years
Int. Cl. D8—*09*
U.S. Cl. D8—137

231,081
HANDRAIL COUPLING
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Feb. 10, 1972, Ser. No. 225,376
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236

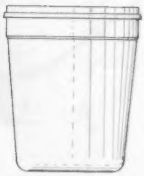


231,082
CLAMPING MEMBER FOR GIRDERS OR THE LIKE
Evan Lewis, Halesowen, England, assignor to Belgrave (Blackheath) Limited, Halesowen, Worcestershire, England
Filed Aug. 17, 1972, Ser. No. 281,410
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

231,083
COMBINED BOTTLE AND CAP THEREFOR
John Brady Campbell, Paramus, N.J., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 3, 1972, Ser. No. 277,601
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

231,084
BOTTLE OR SIMILAR ARTICLE
Frederick A. Motsch, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Jan. 14, 1971, Ser. No. 106,615
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169

231,085
CONTAINER FOR PHARMACEUTICAL PRODUCTS OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 26, 1972, Ser. No. 247,915
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



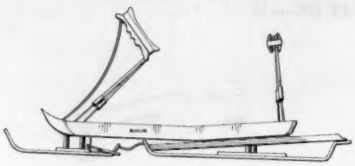
231,086
LINGERIE PACKAGE OR THE LIKE
Maurice Perelman, 10 San Francisco, Naucalpan de Juarez, Mexico, Mexico
Filed Feb. 14, 1972, Ser. No. 226,356
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

231,087
CONTAINER FOR POWDERED PRODUCTS OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 26, 1972, Ser. No. 247,919
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—208

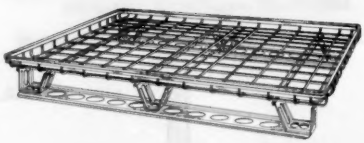
231,088
BEVERAGE CONTAINER OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of abandoned design application Ser. No. 247,934, Apr. 26, 1972. This application Apr. 19, 1973, Ser. No. 352,803
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

231,089
WIG BOX
Robert L. Hill, Franklin Park, Ill., assignor to The Gillette Company, Boston, Mass.
Filed May 6, 1971, Ser. No. 141,075
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—237

231,090
SKI-BOARD
Craig A. Wood, 422 F St., Davis, Calif. 95616
Filed Oct. 14, 1971, Ser. No. 189,478
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9

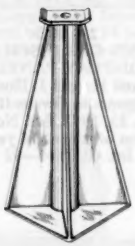


231,091
WIRE FORMED PALLET
James D. Wilson, Garden Grove, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Filed Nov. 3, 1972, Ser. No. 303,520
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53

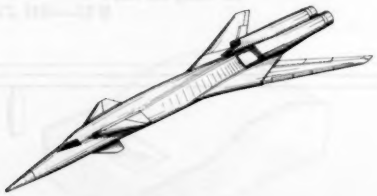


231,092
VEHICULAR RAMP OR SIMILAR ARTICLE
Roland J. West, Andover, Mass., assignor to Vaughn Corporation, Salisbury, Mass.
Filed Mar. 5, 1973, Ser. No. 338,072
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53

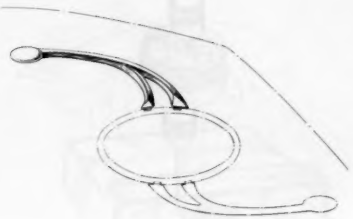
231,093
JACK STAND
Jack W. Woldert, Jr., P.O. Box 4050, Tyler, Tex. 75701
Filed Nov. 28, 1972, Ser. No. 310,006
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



231,094
SUPERSONIC AIRPLANE
Gerald F. Schmidt, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 20 ,1971, Ser. No. 190,849
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—78

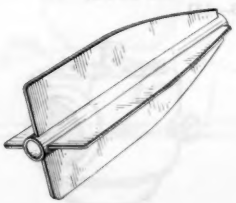


231,095
AUTOMOBILE ORNAMENT
Roger J. Harris, P.O. Box 45684, Dallas, Tex. 78235
Filed Feb. 18, 1972, Ser. No. 227,706
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—190



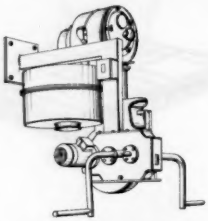
231,096
PALLET
William D. Adam, 31500 1st St., South Laguna, Calif. 92677
Filed Mar. 23, 1973, Ser. No. 344,274
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D14—3 N

231,097
FISH SPEAR FIN
Frank E. Vogeltanz, Pinebeach Resort, La Porte, Minn. 56461
Filed July 24, 1972, Ser. No. 274,472
Term of patent 3½ years
Int. Cl. D22—*05*
U.S. Cl. D22—22

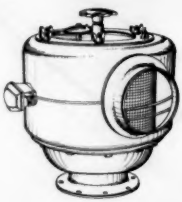


231,098
FOUR-WAY TURRET NOZZLE
August H. Pinke, Hastings, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.
Filed Oct. 12, 1971, Ser. No. 188,633
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

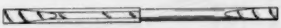
231,099
COMBINED FILTERING AND CIRCULATING UNIT FOR A SHELTER
Matti V. Purhonen, Helsinki, Finland, assignor to Temet Oy, Helsinki, Finland
Filed Jan. 3, 1972, Ser. No. 215,282
Claims priority, application Finland July 2, 1971
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



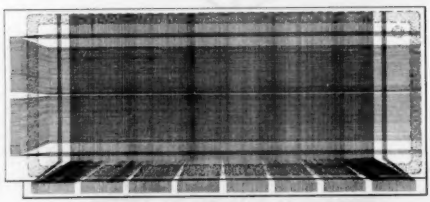
231,100
BLAST VALVE
Matti V. Purhonen, Helsinki, Finland, assignor to Temet Oy, Helsinki, Finland
Filed Dec. 30, 1971, Ser. No. 214,528
Claims priority, application Finland July 2, 1971
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

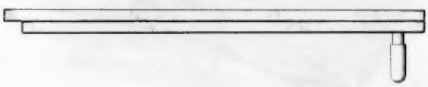


231,101
DENTAL SPATULA
William B. Dragan, R.F.D. Burr St., Fairfield, Conn. 06430
Original design application Apr. 5, 1971, Ser. No. 131,566. Divided and this application Oct. 17, 1972, Ser. No. 300,446
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



231,102
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur and Harold J. Hoehn, Temperance, Mich., assignors to Owens-Illinois, Inc.
Filed Feb. 23, 1972, Ser. No. 228,802
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

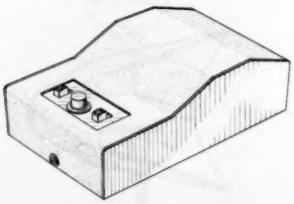




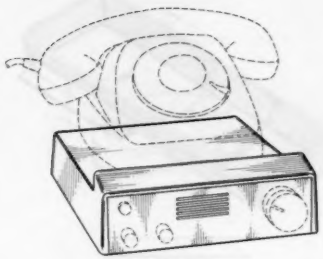
231,103
DATA PROCESSOR
Ernst Moeckl, Stuttgart, Germany, assignor to Mixdorf Computer A.G., Paderborn, Germany
Filed Oct. 19, 1972, Ser. No. 298,865
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

231,104
DECORATIVE ELECTRIC LAMP BULB
Hideji Yamada, Tokyo, Japan, assignor to Riken Shinku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1973, Ser. No. 320,509
Claims priority, application Japan Aug. 30, 1972
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

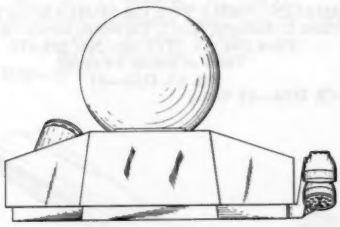
231,105
CONTROL PANEL
Richard G. Honan, Kansas City, Mo., assignor to Honan Sales Company, Inc., Kansas City, Mo.
Filed Apr. 3, 1972, Ser. No. 240,889
Term of patent 3½ years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



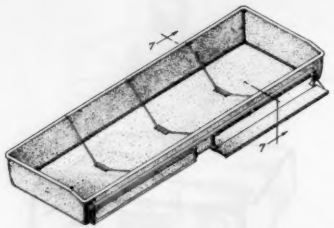
231,106
HOUSING FOR A TELEPHONE ANSWERING APPARATUS
Willy Muller, 13 Guggerstrasse, 8702 Zollikon, Switzerland
Filed July 12, 1971, Ser. No. 161,373
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



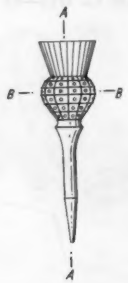
231,107
TELEPHONE SWITCHBOARD TURRET
Alton M. Hambric, Birmingham, Ala., assignor to North American Telephone Corporation
Filed Apr. 6, 1972, Ser. No. 241,886
Claims priority, application Japan Oct. 20, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



231,108
TRANSFER TANK
James S. Sharpe, 1214 E. Palmdale, Orange, Calif. 92665
Filed Nov. 1, 1971, Ser. No. 194,795
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

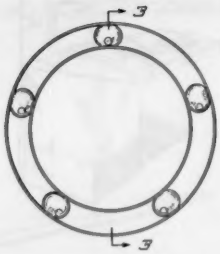


231,109
GOLF TEE
Thomas Kilmartin, 52 Stamperland Drive, Glasgow, Scotland
Filed Apr. 19, 1973, Ser. No. 352,675
Claims priority, application Great Britain Oct. 20, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

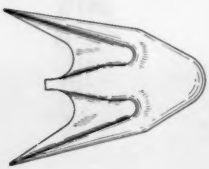


231,110
WHIRLING SKILL TOY OR SIMILAR ARTICLE
Mark L. Roberts, Rte. 2, Caldwell, Idaho 83605
Filed Dec. 15, 1971, Ser. No. 208,527
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 W

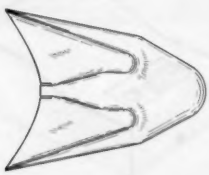
231,111
HOOP TOY
Robert Catron, 5718 Cambridge St., St. Louis Park, Minn. 55416
Original design application May 12, 1971, Ser. No. 142,857. Divided and this application Nov. 29, 1972, Ser. No. 310,211
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 G



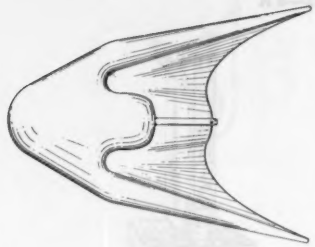
231,112
INFLATABLE KITE
Louis Lawrence Laske, Grays Lake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.
Filed Apr. 4, 1973, Ser. No. 347,859
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



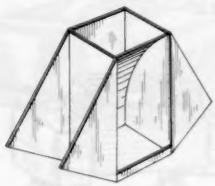
231,113
INFLATABLE KITE
Louis Lawrence Laske, Grays Lake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.
Filed Apr. 4, 1973, Ser. No. 347,878
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



231,114
INFLATABLE KITE
Louis Lawrence Laske, Grays Lake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.
Filed Apr. 4, 1973, Ser. No. 347,930
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF

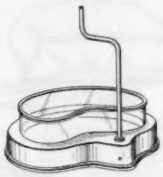


231,115
SNOW DEFLECTOR
Ervin A. Kiecker, Fairfax, Minn. 55332, and Richard A. Loftness, Hector, Minn. 55342
Filed Mar. 3, 1972, Ser. No. 231,774
Term of patent 14 years
Int. Cl. D12—*13, 99*
U.S. Cl. D35—2 A

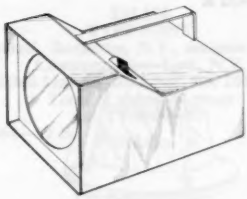


231,116
FUNNEL FOR FLOWER ARRANGEMENTS
David B. Anderson, Jr., 5526 Douglas Drive, Crystal, Minn. 55429
Filed July 18, 1973, Ser. No. 380,392
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

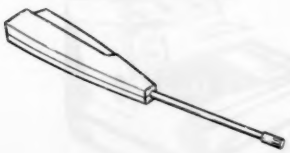
231,117
COMBINED AQUARIUM AND LAMP BASE
Bob J. Hullender, P.O. Box 11068, Santa Rosa, Calif. 95406
Filed July 10, 1972, Ser. No. 270,179
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 D



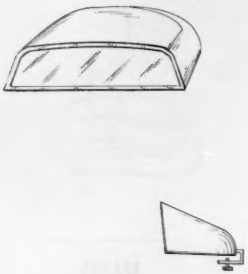
231,118
PORTABLE LIGHT
Charles R. Moore, 1615 Merrifield, Mishawaka, Ind. 46544
Filed Apr. 28, 1972, Ser. No. 248,788
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



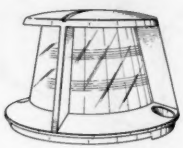
231,119
FUEL GAS LIGHTER
Hiroshi Saito and Kotaro Toyoda, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 24, 1972, Ser. No. 229,241
Claims priority, application Japan Aug. 24, 1971
Term of patent 7 years
Int. Cl. D26—*99*; D8—*03*
U.S. Cl. D48—27 C



231,120
AUXILIARY BRAKE LIGHT
Victor Shanok, Jesse P. Shanok, and Richard Volpe, Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.
Filed Mar. 1, 1972, Ser. No. 231,083
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

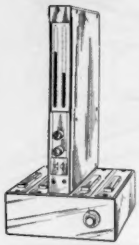


231,121
NAVIGATION LAMP
Peter E. Brudy and John Smith, Willowdale, Ontario, Canada; said Brudy assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed May 11, 1972, Ser. No. 252,541
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

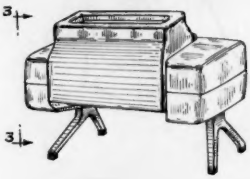


231,122
CASH REGISTER OR SIMILAR ARTICLE
James C. Kaufman, South Bend, Ind., and William L. King, Kettering, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Mar. 6, 1973, Ser. No. 338,721
Term of patent 14 years
Int. Cl. D18—*01*; D14—*02*; D20—*02*
U.S. Cl. D52—4 A

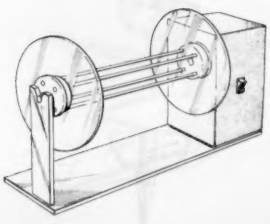
231,123
DISPLAY INSTRUMENT FOR MEASURED INFORMATION
Michael John Tovey, Letchworth, England, assignor to Herbert Controls and Instruments Limited, Letchworth, England
Filed June 6, 1972, Ser. No. 260,346
Claims priority, application Great Britain Dec. 7, 1972
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



231,124
MEAT TENDERIZER
Robert L. Gallup, South Bend, Ind., assignor to Maatschappij Van Berkel's Patent N.V., Rotterdam, Netherlands
Filed Mar. 31, 1971, Ser. No. 130,064
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D55—1 E

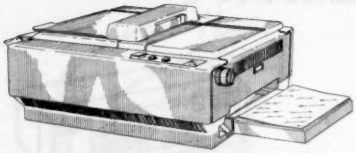


231,125
PAPER WINDER FOR TELEPRINTER EQUIPMENT OR THE LIKE
Arthur A. Hagstrom, Hoffman Estates, and Barry Louis Shevick, Skokie, Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Feb. 17, 1972, Ser. No. 227,329
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D55—1 R



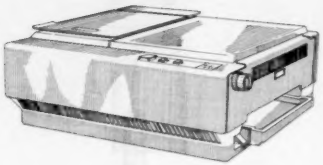
231,126
STRIPPER ELEMENT FOR MEAT SKINNING MACHINES
Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Apr. 21, 1972, Ser. No. 246,505
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 E

231,127
COPYING MACHINE
Stanley E. Case, Sebastopol, Calif., and Stephen K. Bright, Fairport, and William F. Dalton, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1972, Ser. No. 317,027
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q

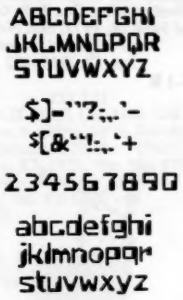


231,128
COPYING MACHINE
Stanley E. Case, Sebastopol, Calif., and Stephen K. Bright and Malcolm J. D. Morgan, Fairport, and William F. Dalton, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1972, Ser. No. 317,030
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q

231,129
COPYING MACHINE
Stanley E. Case, Sebastopol, Calif., and Stephen K. Bright, Fairport, and William F. Dalton, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1972, Ser. No. 317,031
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



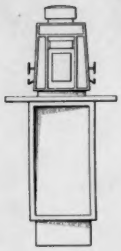
231,130
TYPE FONT
John E. Snitzel, Rochester, N.Y., assignor to The Singer Company, New York, N.Y.
Filed May 22, 1972, Ser. No. 255,957
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



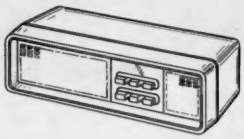
231,131
PAINT ROLLER
John A. Osborne, 1813 Meadow Lane, Arlington, Tex. 76010, and Clay G. Laird, 702 N. Cage, Hamilton, Tex. 76531
Filed Apr. 30, 1973, Ser. No. 355,512
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D64—18

231,132
CART AND HOUSING COMBINATION FOR A PUMP APPARATUS
W. Don Seastrom, Los Angeles, Calif., assignor to Seastrom Manufacturing Co., Inc., Glendale, Calif.
Filed June 28, 1971, Ser. No. 157,790
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R

231,133
SELF-DEPOSIT RECEPTACLE FOR BANKS
Aaron I. Friedman, Kentfield, Calif. (325 Minna St., San Francisco, Calif. 94105)
Filed Feb. 22, 1972, Ser. No. 228,448
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D69—1

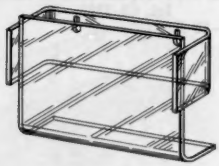


231,134
BURGLAR ALARM
Peter John Doodson, De Koppele 133, Eindhoven, Netherlands
Filed May 4, 1971, Ser. No. 140,311
Claims priority, application Switzerland Nov. 9, 1970
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1 A

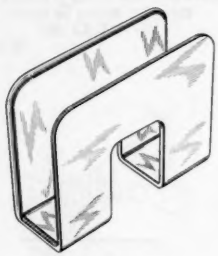


231,135
CANDLE
Lamar B. Marcum, Dayton, Ohio (118 Hendrix St., Waynesville, N.C. 28786)
Filed Mar. 27, 1972, Ser. No. 238,735
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D73—1 B

231,136
RACK FOR FILES OR THE LIKE
Jean-Marie Mauclet, 32 Irving Place, Buffalo, N.Y. 14201
Filed Aug. 31, 1971, Ser. No. 176,793
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A



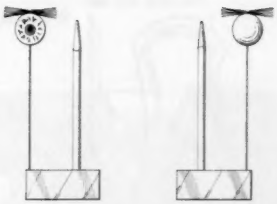
231,137
VERTICAL FILE RACK
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker
Filed Mar. 7, 1972, Ser. No. 232,658
Claims priority, application Sweden Sept. 8, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A



231,138
COMBINATION PENHOLDER WITH PEN
Edwin Ewry, Mill Valley, Calif., assignor to Micropoint Engineering Company, Sunnyvale, Calif.
Filed Aug. 7, 1972, Ser. No. 278,683
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—5 B

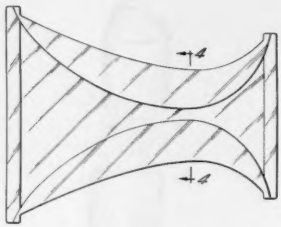
231,139
PENCILHOLDER
Alwin John Stahel II, New Brighton, Minn., assignor to Don E. Harley Associates, Inc., St. Paul, Minn.
Filed Aug. 14, 1972, Ser. No. 280,326
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A

231,140
DESK SET
James A. Blodgett, 22937 Schoolcraft St., Canoga Park, Calif. 91304
Filed Aug. 29, 1972, Ser. No. 284,674
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D74—5 B



231,141
PENCIL BOX OR THE LIKE
Herman S. Cripe, 2030 Hillsdale, Kalamazoo, Mich. 49007
Filed Aug. 27, 1971, Ser. No. 175,809
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—21 A

231,142
DIAPER HOLDER
George F. Koury, Metairie, La., assignor to Pantasote Company, New York, N.Y.
Filed Apr. 5, 1971, Ser. No. 131,574
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 A

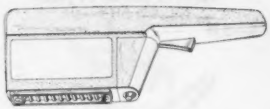


231,143
SHOE INSERT PAD
Vincent R. Casey, Portland, Oreg., assignor to Orral A. Brown and Mildred D. Brown
Filed Sept. 9, 1971, Ser. No. 179,262
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1 J

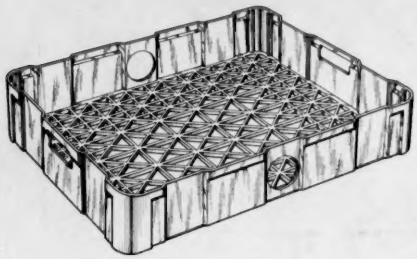
231,144
HAIR GROOMING APPLIANCE
Martin J. Wolff, West Haven, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.
Filed Jan. 15, 1973, Ser. No. 323,965
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

231,145
HAIR CURLER
Ann Di Gaetano, Antonina Di Gaetano, and Guiseppina Di Gaetano, all of 390 Newport, Detroit, Mich. 48215
Continuation-in-part of design application Ser. No. 104,546, Jan. 6, 1971, now Patent No. 226,046, dated Jan. 16, 1973. This application July 13, 1972, Ser. No. 271,366
Term of patent 14 years
The portion of the term of the patent subsequent to Jan. 16, 1987, has been disclaimed
Int. Cl. D28—*03*
U.S. Cl. D86—10 E

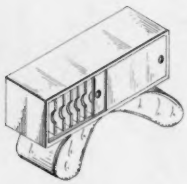
231,146
HAIR DRYER WITH MIST DISPENSER
Ronald B. Kemnitzer, Lisle, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 15, 1973, Ser. No. 323,565
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



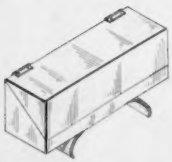
231,147
BAKERY TRAY OR THE LIKE
Charles F. Hinrichs, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 29, 1971, Ser. No. 213,805
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



231,148
CASE FOR CASSETTES OR THE LIKE
Asa P. Ruskin, 865 West End Ave., New York, N.Y. 10025
Filed June 27, 1972, Ser. No. 266,664
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 D

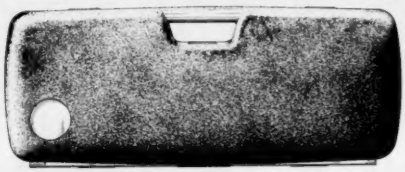


231,149
HOLDER FOR CASSETTES OR THE LIKE
Asa P. Ruskin, 865 West End Ave., New York, N.Y. 10025
Filed June 27, 1972, Ser. No. 266,665
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 D

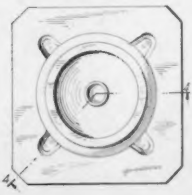


231,150
RACQUET COVER
Lois B. Berry, 509 W. Grant Place, Chicago, Ill. 60614, and Susan Miller, 290 Drexel Lane, Glencoe, Ill. 60022
Filed Aug. 21, 1972, Ser. No. 282,080
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R

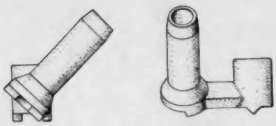
231,151
RACKET CASE
Paul E. Brefka, Framingham, and Peter A. Latham, Newburyport, Mass., assignors to Acro, Inc., Stoneham, Mass.
Filed Aug. 24, 1972, Ser. No. 283,349
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R



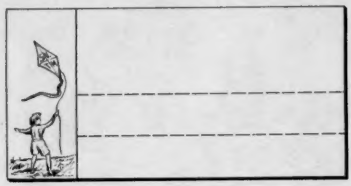
231,152
BASE FOR A BOWLING BALL CARRIER OR THE LIKE
Simon Javkin, 160 West End Ave., New York, N.Y. 10023
Filed Apr. 17, 1972, Ser. No. 245,002
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 D



231,153
PIRN HOLDER
Roy E. Dillon, Madison, N.C., assignor to Harris Machine Company, Inc., Greensboro, N.C.
Filed Nov. 3, 1971, Ser. No. 195,542
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D92—15



231,154
LABEL
Edward N. Parker, 307 H St. NW., Washington, D.C. 20001
Filed May 12, 1972, Ser. No. 252,964
Term of patent 7 years
Int. Cl. D19—*08*
U.S. Cl. D96—8 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2D DAY OF APRIL, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Carlox: *See—*
Jonssen, Finn L.; and Trolle, Sten, 3,800,695.

Abbink, Henry C.; and Goodwin, Norman W., to Litton Systems, Inc. Method of forming a stable MNOS IGFET. 3,800,411, Cl. 29-571.000.

Abbott Laboratories: *See—*
Horrom, Bruce Wayne, 3,801,636.
Martin, Jerry Roy; and Goldstein, Alma W., 3,801,465.

Abe, Toshihiro: *See—*
Masjda, Naosuke; and Abe, Toshihiro, 3,801,162.

Ablett, Roger John Herbert, to Image Analysing Computers Limited. Feature selection in image analysis. 3,801,741, Cl. 178-6.800.

Aboutboul, Henri A.: *See—*
Krekeler, Jerome H.; Kirch, William; and Aboutboul, Henri A., 3,801,705.

ACF Industries, Incorporated: *See—*
Krug, John A. K., Jr., 3,800,712.
Winkley, Jerry H., 3,800,767.

ACI Operations Pty. Limited: *See—*
Corderoy, Henry Morgan, 3,800,681.

Acker, Norbert Karl, to Scanner, Inc. Method and apparatus for identifying objects. 3,801,775, Cl. 235-61.11e.

Ackley, Edward L., to Ackley Manufacturing Company. Fluid operated reciprocation motor. 3,800,662, Cl. 91-1.000.

Ackley Manufacturing Company: *See—*
Ackley, Edward L., 3,800,662.

Adachi, Kiyoshi: *See—*
Ozawa, Goro; Kosaka, Kenzo; Kobayashi, Hideo; Adachi, Kiyoshi; and Okaya, Tsutomu, 3,800,374.

Adams, Alfred O., 50% to Adams, Roy J. Flower pot with water reservoir. 3,800,471, Cl. 47-38.000.

Adams, Leonard, Jr.: *See—*
Alexander, John D.; and Adams, Leonard, Jr., 3,801,394.

Adams, Roy J.: *See—*
Adams, Alfred O., 3,800,471.

Adelman, Robert Leonard, to Du Pont de Nemours, E. I., and Company. Interpolymers of vinyl fluoride, vinyl esters and unsaturated carboxylic acids. 3,801,550, Cl. 260-78.50r.

Adolphen, Gerhard; Wedemeyer, Karlfried; and Sutter, Wilhelm, to Bayer AG. Process for the preparation of pyrocatechol and its monoethers. 3,801,651, Cl. 260-613.00d.

Advance Manufacturing Corporation: *See—*
La Boda, John Albert, 3,801,028.

Advanced Memory Systems Inc.: *See—*
Palfi, Thomas Laszlo; and Oliphant, James Millard, 3,801,964.

Advenier, Pierre M., to Sofredi. Apparatus for regulating the duration of a square-wave signal in an electronic injection control installation for diesel engines. 3,800,749, Cl. 123-32.0ea.

Aerojet-General Corporation: *See—*
Mastrolia, Edmund J.; and Michigian, Harry J., 3,801,385.

Aerpat A.G., mesne: *See—*
Summerlin, Frederick Arthur; and Jeal, Harvey Philip, 3,800,581.

Aetna Bearing Company: *See—*
Keleshian, John V., 3,800,384.

Afanador, Carlos P.; and Jones, Richard L., to Dayton-Walter Corporation, The. Knuckle assembly. 3,801,124, Cl. 280-93.000.

Aga, Rene Leon; and Debus, Henri Robert, to Labofina S.A. Separation of acetic acid, water and formic acid. 3,801,629, Cl. 260-541.000.

Agence Nationale de Valorisation de la Recherche Anvar: *See—*
Kant, Michel, 3,801,840.

Agency of Industrial Science & Technology: *See—*
Sato, Kazuo; Kamiyama, Kenji; and Tahara, Koichi, 3,801,471.

Agfa-Gevaert: *See—*
Claes, Frans Henri, 3,801,326.

Agfa-Gevaert Aktiengesellschaft: *See—*
Pelte, Richard; Huber, Theo; and Mayr, Helmut, 3,801,194.

Agfa-Gevaert N.V.: *See—*
Brinckman, Eric Maria; Heugebaert, Frans Clement; and Ceulemans, Renaat Andreas, 3,801,330.

Agriframe, Inc.: *See—*
Baggiolini, Primo; Muscio, James Edward; and Franscioni, Michael Silvio, 3,800,518.

Ahland, Erwin; and Ratajczak, Ernst-Albert, to Bergwerksverband GmbH and Metallgesellschaft AG. Process for cooling hot briquettes. 3,800,428, Cl. 34-20.000.

Air Filters, Inc.: *See—*
Howard, Sol; and Schaaf, Robert, 3,800,359.

Air Pollution Specialties, Inc.: *See—*
Tarves, Robert J., Jr., 3,800,505.

Air Products and Chemicals, Inc.: *See—*
Lagnsam, Michael, 3,801,556.
Langsam, Michael, 3,801,557.

Air Reduction Company, Incorporated: *See—*
Shattes, Walter J.; Marancik, William G.; and Kirk, Bradley S., 3,800,414.

Airpax Electronics, Incorporated: *See—*
Shand, J. Richard; and Merriken, Lyal N., 3,801,758.

Airport Corporation: *See—*
Cohen, Arthur M., 3,800,921.

Aitken, Donald F., to Applied Sciences, Inc. Voltage responsive alarm system for telephone lines. 3,801,974, Cl. 340-248.00b.

Ajinomoto Co., Inc.: *See—*
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,801,456.
Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,801,633.

Akaike, Seiji; and Maemori, Kenichi, to Nissan Motor Company, Limited and Atsugi Motor Parts Company, Limited. Hydropneumatic impact absorptive device. 3,801,087, Cl. 267-139.000.

Akawie, Richard I.: *See—*
United States of America, National Aeronautics and Space Administration, 3,801,617.

Akiyama, Katsuhiko; and Kajiyama, Yuji, to Sony Corporation. Printed circuit board crossover and method for manufacturing the same. 3,801,388, Cl. 156-3.000.

Akiyama, Mikio; and Yoshii, Isao, to Canon Kabushiki Kaisha. Color electrophotographic copying apparatus capable of color balance adjustment. 3,801,197, Cl. 355-4.000.

Akiyama, Shunichi: *See—*
Suzuki, Takashi; Sumino, Yasuhiro; Akiyama, Shunichi; and Fukuda, Hideo, 3,801,455.

Aktiebolaget Atomenergi: *See—*
Kraemer, Wieland, 3,801,444.

Aktiebolaget Carl Munters: *See—*
Meek, George W., 3,801,419.

Aktiebolaget Gylling & Co.: *See—*
Westbeck, Gunnar, 3,801,743.

Aktiebolaget K.A. Friberg: *See—*
Friberg, Karl Axel, 3,800,333.
Friberg, Karl Axel, 3,800,334.

Aktiebolaget Tudor: *See—*
Sundberg, Erik Gustav, 3,801,399.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Kanngiesser, Karl-Werner, 3,801,895.
Rosgen, Friedhelm; and Schwarz, Hans, 3,801,148.
Scheel, Joachim; and Pauler, Horst, 3,801,392.

Akutagawa, Susumu: *See—*
Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, 3,801,668.

Akzo N.V.: *See—*
Van Andel, Eleonoor, 3,801,908.

Akzona Incorporated: *See—*
Gorlach, Helmut; Stroot, Walter; and Kreckl, Alois, 3,801,422.

Albares, Donald J., to United States of America, Navy. Laser heterodyne acoustic sensor. 3,800,906, Cl. 181-.5np.

Albertson, Robert V., to Zeal Corporation. Shock absorber mount for vehicles with skis. 3,800,896, Cl. 180-5.00r.

Albrecht, W., KG: *See—*
Palmen, Otto, 3,800,377.

Alcock, Richard A.; and Shosie, Wayne A., to Fastener Engineers, Inc. Hydraulically poerated cropping apparatus. 3,800,645, Cl. 83-198.000.

Aldrich Chemical Company: *See—*
Biel, John Hans; and Klundt, Irwin L., 3,801,624.

Alexander, John D.; and Adams, Leonard, Jr., to Finn Industries, Inc., The. Method for applying coupons to carton blanks. 3,801,394, Cl. 156-70.000.

Alferov, Yury Fedorovich: *See—*
Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich, 3,801,718.

Allard, John Joseph, to AMF Incorporated. Brushless variable speed drive for A.C. synchronous motor. 3,801,887, Cl. 318-138.000.

Allen, George Rodger: *See—*
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,801,594.

Allen, Michael George; Buchholtz, Theodore; and Tiers, George Van Dyke, to Minnesota Mining & Manufacturing Company. Resilient composite useful as surfacing for athletics. 3,801,421, Cl. 161-67.000.

Allen, Richard A., to Avco Corporation. Laser and method of operation. 3,801,927, Cl. 331-94.500.

Alles, Hans-Ulrich, to Bayer Aktiengesellschaft. Process for the preparation of 2,2,4,4-tetrafluoro-1,3-benzodioxanes. 3,801,599, Cl. 260-340.300.

Allied Chemical Corporation: *See—*
Sack, Milton, 3,801,706.
Tetenbaum, Marvin T.; and Stone, Herman, 3,801,533.

Allis-Chalmers Corporation: *See—*
Boone, Jerry C., 3,800,804.
Hansen, Kenneth N., 3,800,924.
Johnson, Wayne E., 3,800,614.
La Vallee, Raymond F., 3,800,948.

Alloy Surfaces Co., Inc.: *See—*
Baldi, Alfonso L., 3,801,357.

Alpers, Frederick C., to United States of America, Navy. Remote clock synchronization system. 3,801,981, Cl. 343-7.500.

Alpha Industries, Inc.: *See—*
Wall, Ernst L.; and Niblack, Walter K., 3,800,412.

Altvater, Jakob. Arrangement for the removal of waste material. 3,801,023, Cl. 241-83.000.

Aluminum Company of America: *See—*
Gayner, Herbert; and Smith, David A., 3,800,395.
Racunas, Bernard J.; and Minick, John R., 3,801,003.

Amano, Hiroyuki: *See—*
Shirasu, Kazuo; Amano, Hiroyuki; and Ohi, Reiichi, 3,801,322.

Ambac Industries Incorporated: *See—*
Hookim, Young; and King, Neil M., 3,801,972.

American Air Filter Company, Inc.: *See—*
Mutchler, Paul A., 3,801,258.

American Aniline Products, Inc.: *See—*
Renfrew, Edgar Earl; and Zanella, Dominic Andrew, 3,801,270.

American Can Company: *See—*
Kossmann, Hans, 3,801,485.

American Cyanamid Company: *See—*
Brooks, Houston George, Jr., 3,801,539.
Diehl, Robert Eugene; Schrider, Michael Stanley; and Kantor, Sidney, 3,801,630.
Dorion, George Henry, 3,801,782.
Fanelli, Anthony Joseph; Blank, Gerlinde Metzler; and Rauch, Francis Clyde, 3,801,639.
Grayson, Martin, 3,801,681.
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,801,594.
Postal, Robert Harrison, 3,801,324.

American Flange & Manufacturing Co., Inc.: *See—*
Jesevich, John; and Simkus, Vyto, 3,800,401.

American Home Products Corporation: *See—*
Bell, Stanely C.; and Wei, Peter H. L., 3,801,593.
Nudelman, Abraham; and McCaully, Ronald J., 3,801,568.

American Hospital Supply Corporation: *See—*
Higbee, Roland K., 3,801,176.

American Monitor Corporation: *See—*
Denney, Jerry W., 3,801,466.

American Optical Corporation: *See—*
Upton, Lee O., 3,801,336.

American Velcro, Inc.: *See—*
Erb, George H., 3,801,245.

American Waagner-Biro Company, Inc.: *See—*
Kemmetmueller, Roland, 3,800,427.

AMF Incorporated: *See—*
Allard, John Joseph, 3,801,887.
Hays, Gordon W.; and Hollenton, Frank, 3,800,807.
Loh, Huai-Kuang, 3,801,871.

AMF Mares Sub S.p.A.: *See—*
Semeia, Roberto, 3,800,329.

Amidon, Alan B.: *See—*
Gundlach, Robert W.; Mammino, Joseph; Amidon, Alan B.; and Carr, George P., 3,801,315.

Amo, Donnell J. Shrink-wrapping device. 3,801,268, Cl. 432-225.000.

Amoco Production Company: *See—*
Thompson, Robert R.; Duschatko, Robert W.; and Nash, Arthur J., 3,801,281.

AMP Incorporated: *See—*
Edwards, Joseph R., Sr.; and Kloth, James Albert, 3,800,584.
Johnston, James Joseph, 3,800,390.
Lynch, James Edward, 3,801,953.
Shultz, Edmund Franklin, Jr.; and Katzaman, Ronald Eugene, 3,800,416.
Wise, Joseph Agusta, 3,801,950.

AMP Ubcirorated: *See—*
Brehm, Ronald Carl; Folkenroth, Earl Ernest; and Wagner, Earl William, 3,800,389.

Anazawa, Shinzo, to Nippon Electric Company, Limited. Packaged semiconductor device including a housing in the form of a rectangular parallelepiped and ceramic rectangular base member. 3,801,881, Cl. 317-234.00r.

Anderson, Ann. Plastic quilted bedspread. 3,801,420, Cl. 161-52.000.

Anderson, Hakan. Feed saver for a poultry egg laying battery. 3,800,739, Cl. 119-18.000.

Anderson, Harold Henry: *See—*
Ryall, Michael Leslie; Anderson, Harold Henry; and Pezzani, Guido, 3,801,217.

Anderson, John Erling, to Union Carbide Corporation. Oxygen refuse converter. 3,801,082, Cl. 266-33.00s.

Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., to Medical Incorporated. Method of making a suturing member and mounting the suturing member on a device. 3,800,403, Cl. 29-445.000.

Anderson, Philip E. Perpetual calendar and method of determining days of week from calendar dates. 3,800,454, Cl. 40-109.000.

Andlick, Colin; and Covington, Robert Allen, Jr., to Du Pont de Nemours, E. I., and Company. Slurry polymerization reactor. 3,801,286, Cl. 23-285.000.

Andoh, Shizuo; Urade, Toshinori; and Hirose, Tadatsugu, to Fujitsu Limited. Plasma display panel. 3,801,851, Cl. 313-220.000.

Andre, Jules E. Safety ski binding. 3,801,119, Cl. 280-11.35k.

Andres, William A.: *See—*
Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., 3,800,403.

Anfossi, Henri, to Service d'Exploitation Industrielle des Tabacs. Device for forming groups of objects moved on a conveyor as a single layer sequence. 3,800,936, Cl. 198-34.000.

Anglo American Corporation of South Africa Limited: *See—*
Watt, Ivan Falkland, 3,800,918.

Anker-Werke AG: *See—*
Michaelis, Heinz; Rethmeier, Gerhard; and Schmieder, Fritz, 3,801,774.

Aoki, Hisashi: *See—*
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.

Aoki, Katashi. Device for keeping metal mold halves in a clamped state. 3,801,257, Cl. 425-450.000.

Apparecchiature E. Macchine Utensili S.A.S. di Milani Giuseppe & C.: *See—*
Milani, Giuseppe, 3,801,249.

Appenzeller, Valentin: *See—*
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,800,568.

Appleton, Arthur L. Sealed electrical connector for securing conduits to junction boxes. 3,801,131, Cl. 285-159.000.

Applied Power Inc.: *See—*
Reynolds, Roy; and Neill, William T., 3,801,151.

Applied Power Industries, Inc.: *See—*
Clark, Ray, 3,800,663.

Applied Sciences, Inc.: *See—*
Aitken, Donald F., 3,801,974.

Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., to USC Incorporated. Leak detection system for a nuclear reactor. 3,801,440, Cl. 176-19.0ld.

Aquino, Herman A.: *See—*
Stark, Marvin; Jones Jerry L.; Tuck, Richard L., Sr.; and Aquino, Herman A., 3,800,714.

Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, to Fuji Photo Film Co., Ltd. Method of developing silver halide photosensitive material. 3,801,323, Cl. 96-66.00r.

Arai, Taketoshi: *See—*
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.

Ardis, Alan E.; and Natoli, Frank S., to United States of America, Army, mesne. Thermal stability of aluminum hydride through use of stabilizers. 3,801,707, Cl. 423-645.000.

Arima, Kei; Nogami, Ikuo; and Yoneda, Masahiko, to Takeda Chemical Industries, Ltd. Method for producing L-tryptophan. 3,801,457, Cl. 195-29.000.

Arimann, Edith R.: *See—*
Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., 3,800,403.

Arken, Theodore; and Mallery, Lawrence E., to GTE Sylvania Incorporated. Detachment apparatus for balloon borne equipment. 3,800,590, Cl. 73-170.00r.

Armco Steel Corporation: *See—*
Lewis, Clarence P., 3,800,580.

Arn, Fred A.; Dowicki, William J.; and Pierce, Howard E., to Contromatics Corporation. Manual valve override. 3,801,062, Cl. 251-14.000.

Arneson, Harold E. G. Vibration attenuation coupling structure. 3,800,555, Cl. 64-1.00v.

Arnold, Dan McCay, to Texaco Inc. Well logging system and method. 3,801,816, Cl. 250-270.000.

Arnold Dryer Company: *See—*
Linde, Gordon J., 3,800,429.

Arnold, John L., to Dow Chemical Company, The. Reducing scale deposition from alkaline earth metal sulfate and sulfite slurries. 3,801,699, Cl. 423-244.000.

Artigiani Meccanici Associati Societa di Fatto: *See—*
Zucchini, Guido, 3,800,566.

Artos-Gesellschaft fur industrielle Forschung und Entwinklung C.A. Meier-Windhorst: *See—*
Meier-Windhorst, Christian August, 3,800,438.

Arts, Gerardus Wilhelmus Maria, to U.S. Philips Corporation. Nightlight. 3,801,814, Cl. 240-73.0qd.

Arudale Manufacturers, Inc.: *See—*
Tanner, David N., 3,800,512.

Arundale Manufacturers, Inc.: *See—*
Corkery, Gregory O'C.; and Diehl, Raymond A., 3,801,405.

Arvin Industries, Inc.: *See—*
Scheitlin, George E.; and Little, Richard F., 3,801,287.

Asahi Glass Company Limited: *See—*
Furuuchi, Shigemasa; Nishihara, Akira; Okajima, Yasunaru; and Kamimori, Tadatoshi, 3,801,352.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.
Yamaguchi, Hiroyuki; and Komure, Shigeyuki, 3,801,553.

Asahi Kogaku Kogyo Kaisha: *See—*
Nobusawa, Tsukumo, 3,800,683.

Asaki Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Harumi, 3,801,929.

Asamizu, Yoshio: *See—*
Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, 3,801,368.

Ashtabula Bow Socket Company: *See—*
Baginski, Martin R., 3,800,623.

Ashworth, Denis Henry, to Simon Engineering Dudley Limited. Access equipment. 3,800,912, Cl. 182-65.000.

Asimor, Brian L.: *See—*
Khambatta, Sarosh M.; and Asimor, Brian L., 3,800,383.

Asker, Gunnar C. F.; and Hubscher, Maurice A. Exchange packing element. 3,800,515, Cl. 55-387.000.

Athlone Industries, Inc.: *See—*
Simon, Jack, 3,800,368.

Atkins, Carl E., to Wagner Electric Corporation. Power transfer circuit for momentarily energizing keyable control circuits. 3,801,798, Cl. 307-98.000.

Atkins, Carl E., to Wagner Electric Corporation. Capacitance and resistance-responsive control circuits. 3,801,799, Cl. 307-116.000.

Atlantic Products Corporation: *See—*
Hibbert, Wayne Greenlee, 3,800,814.

Atlantic Richfield Company: *See—*
Kern, Loyd R., 3,800,874.
Larson, Allen E., 3,801,335.

Atlas Chemical Industries, Inc.: *See—*
Kuehn, Erich, 3,801,333.

Atsugi Motor Parts Company, Limited: *See—*
Akaike, Seiji; and Macmori, Kenichi, 3,801,087.

Atsumi, Akihiko: *See—*
Shiraishi, Tatsuo; Shimizu, Shinkichi; Atsumi, Akihiko; and Ichihashi, Hiroshi, 3,801,670.

Audi nsu Auto Union Aktiengesellschaft: *See—*
Gotzenberger, Adolf; and Scheeweiss, Manfred, 3,801,125.
Ruf, Max, 3,801,240.

Augsburger, Larry Louis; and Marvel, John Ray, to Johnson & Johnson. Fragrance retention by chelating agent coated talc. 3,801,709, Cl. 424-69.000.

Austin, Carl C.: *See—*
Bewell, Robert G. S.; Austin, Carl C.; Halsey, Carl C.; and Smith, Myron R., 3,800,704.

Austin, Timothy K., to Container Corporation of America. Hot air diversion device. 3,801,266, Cl. 432-45.000.

Automatisme & Technique: *See—*
Bardet, Gerard, 3,800,496.

Automobiles Peugoet: *See—*
Piret, Jean, 3,800,628.

Automobiles Peugot: *See—*
Sigwald, Jacques, 3,800,978.

Auxier, Thomas A.: *See—*
Hauser, Ambrose A.; and Auxier, Thomas A., 3,800,864.

Avco Corporation: *See—*
Allen, Richard A., 3,801,927.

Avon Products, Inc.: *See—*
Saas, Hosny Y.; Tuffile, Fred M.; Cunningham, Andrew J.; and Franco, Philip, 3,800,809.

Avondoglio, Leo; and Shuhan, George N. Filter for removing particles and aerosols from air and other gases. 3,800,514, Cl. 55-319.000.

Azapco, Inc.: *See—*
Zankowski, Arthur, 3,800,533.

Babb, John H., Jr.; and Maurits, Orville C., to Kysor Industrial Corporation. Free inside knob lock set. 3,800,573, Cl. 70-217.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Baumann, Hans; Einwiller, Andreas; and Hansen, Guenter, 3,801,596.
Hartwig, Ernst, 3,801,595.
Krabetz, Richard; Willersinn, Carl-Heinz; Engelbach, Heinz; Wistuba, Hermann; Lebert, Ulrich; and Frey, Walter, 3,801,634.
Pasedach, Heinrich; Bittler, Knut; Francke, Dilihard; and Hoffmann, Werner, 3,801,653.
Petersen, Harro; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,801,546.
Scheurermann, Horst; Mach, Wolfgang; and Radiki, Volker, 3,801,602.

Baggiolini, Primo; Muscio, James Edward; and Franscioni, Michael Silvio, to Agriframe, Inc. Lettuce harvester. 3,800,518, Cl. 56-327.00r.

Baginski, Martin R., to Ashtabula Bow Socket Company. Bicycle pedal. 3,800,623, Cl. 74-594.400.

Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich. Device for fixing a plurality of electrodes and for supply current thereto. 3,801,718, C. 13-14.000.

Bailey, Knight V., to Bendix Corporation, The. Grid for an automatic coordinate determining device. 3,801,733, Cl. 178-19.000.

Bailiff, Vernon B. Universal ring jaws. 3,800,402, Cl. 29-445.000.

Baillie, Robert A.: *See—*
Hosler, Peter; and Baillie, Robert A., 3,801,620.

Baily, Edward Dyson: *See—*
Jennings, Barry Randal; and Baily, Edward Dyson, 3,801,204.

Bajars, Laimonis, to Petro-Tex Chemical Corporation. Oxidative dehydrogenation process and catalysts. 3,801,672, Cl. 260-683.300.

Baker, Theodore H.; Chafghaichi, Majid; and Stevens, Richard C., to International Business Machines Corporation. Method of testing for the operability of integrated semiconductor circuits having a plurality of separable circuits. 3,801,905, Cl. 324-73.00r.

Baldi, Alfonso L., to Alloy Surfaces Co., Inc. Diffusion coating. 3,801,357, Cl. 117-107.20p.

Baldwin, D. H., Company: *See—*
Bunger, David A., 3,801,721.

Balintfy, Joseph L. Diet computer. 3,801,778, Cl. 235-124.000.

Baltimore Aircoil Company, Inc.: *See—*
Engalitcheff, John, Jr., 3,800,553.

Baltrush, John: *See—*
Zajac, Chester; and Baltrush, John, 3,801,795.

Banks, Jon F., to Brown & Williamson Tobacco Corporation. Deposition of menthol on tobacco. 3,800,806, Cl. 131-144.000.

Baranauckas, Charles F.; and Gordon, Irving, to Borg-Warner Corporation, mesne. Bicyclic esters of phosphorus acid. 3,801,677, Cl. 260-937.000.

Bard, C. R., Inc.: *See—*
Smith, David J., 3,800,338.

Bardet, Gerard, to Automatisme & Technique. Machine for filling receptacles in particular fountain pen cartridges. 3,800,496, Cl. 53-64.000.

Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Steering wheel for motor vehicle. 3,800,604, Cl. 74-552.000.

Barenyi, Bela, to Daimler-Benz AG. Steering wheel for motor vehicles. 3,800,620, Cl. 74-552.000.

Baribeau, Ronald O.; and Baribeau, Russell A. Fuel injection system. 3,800,770, Cl. 123-139.0aj.

Baribeau, Russell A.: *See—*
Baribeau, Ronald O.; and Baribeau, Russell A., 3,800,770.

Barker, Michael D.; Wood, Jack; and Binnie, Edward N., to Shell Oil Company. Pesticidal 3-phosphorylated 1,2,4-thiadiazole derivatives. 3,801,586, Cl. 260-302.00e.

Barnes, Alan G., to Wilkinson Sword Limited. Signal translating circuit and methods for handling unidirectional input signals. 3,801,970, Cl. 340-228.00r.

Barrett, Cedric A.; and Kingsbury, John P. Shock absorbing bumper. 3,801,147, Cl. 293-9.000.

Barrett, Gilbert R. Self-heading wild fowl decoys. 3,800,457, Cl. 43-3.000.

Barrett, Harrison H., to Raytheon Company. Spatially modulated imaging system. 3,801,785, Cl. 250-321.000.

Barrett, Iral D.; and Spoor, Daniel L., to Supra Products, Inc. Combination lock. 3,800,576, Cl. 70-302.000.

Barrie, Arnold Varden. Apparatus and method for cutting a travelling web of material. 3,800,640, Cl. 83-37.000.

Barron, Charles D., to Jackson, Byron, Inc. Towing winch control system. 3,801,071, Cl. 254-173.00r.

Barron, George E.; and Pavone, Harry, to Grant, Louis A., Inc. Ladle skimming mechanism. 3,800,965, Cl. 214-32.000.

Bartelheimer, Ehrhard, to Kocha Adler AG. Machine for sealing folding cartons with adhesive tape strips. 3,800,679, Cl. 93-36.900.

Barth, Gerald Dean; and Jennings, Ralph Ernest, to Illinois Tool Works Inc. Metal penetrating staple. 3,800,653, Cl. 85-13.000.

Barthels, Heinz; Fassbender, Josef; and Katscher, Werner, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Nuclear-fuel element. 3,801,450, Cl. 176-73.000.

Bartl, Herbert: *See—*
Striegler, Hellmut; Resz, Raoul; and Bartl, Herbert, 3,801,428.

Barwig, Karlhorst; and Walker, Roland, to Siemens Aktiengesellschaft. Information storage having monitored functions. 3,801,802, Cl. 235-153.0am.

Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich. Device for secondary cooling of round shaped ingots during casting of metal. 3,800,855, Cl. 164-283.000.

Bastgen, Wendel, to Firma Alb. Klein K-G. Filter. 3,800,952, Cl. 210-324.000.

Batista, Roy I.: *See—*
Hagan, Melvin A.; and Batista, Roy I., 3,800,406.

Bauch, Ernst, to Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH. Apparatus for treating and winding of spun filaments. 3,801,242, Cl. 425-66.000.

Baudin, Pol: *See—*
Van Laethem, Robert; and Baudin, Pol, 3,801,423.

Bauer, Karlheinz. Vibrator device for earth boring or compacting. 3,800,889, Cl. 175-19.000.

Bauman, Martin F., Jr. Golf bag warmer. 3,800,863, Cl. 165-47.000.

Baumann, Hans; Einwiller, Andreas; and Hansen, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Basic dyes of the naphtholactam series. 3,801,596, Cl. 260-326.620.

Baumgartner, Werner; Schink, Norbert; Schnoeller, Manfred; and Sporrer, Ludwig, to Siemens Aktiengesellschaft. Induction coil for zone melting of semiconductor rods. 3,801,769, Cl. 219-10.790.

Bavitt, Willis A., Sr., to General Motors Corporation. Rotational characteristics sensing and signal generating mechanism and a magnetic field interrupter therefor. 3,801,845, Cl. 310-168.000.

Baxter, Walter G., to General Electric Company. Fe Al Cr Y Co alloy. 3,800,631, Cl. 75-124.000.

Bayer AG: *See*—
Adolphen, Gerhard; Wedemeyer, Karlfried; and Sutter, Wilhelm, 3,801,651.

Bayer Aktiengesellschaft: *See*—
Alles, Hans-Ulrich, 3,801,599.
Bien, Hans-Samuel; Hohmann, Walter; Vollman, Geinrich; and Leister, Heinrich, 3,801,606.
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., 3,801,590.
Grolig, Johann; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,801,626.
Hartmann, Peter; and Roos, Ernst, 3,801,603.
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Meiser, Werner; Behrenz, Wolfgang; and Buchel, Karl-Heinz, 3,801,712.
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Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.
Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,801,589.
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Bazarian, Albert, Jr.: *See*—
Lee, Robert Arthur; and Bazarian, Albert, Jr., 3,800,378.

Bazhal, Anatoly Ignatievich; and Ponomozenro, Leonid Petzovich. Percussive drilling machine. 3,800,886, Cl. 173-93.000.

Beall, George H.; Chyung, Chi-Kwun; and Watkins, Harry J., to Corning Glass Works. Mica glass-ceramics. 3,801,295, Cl. 65-33.000.

Beals, Duane L.; and Peifer, Gary S., to Caterpillar Tractor Company. Coaxial steering wheels for an articulated motor grader. 3,800,903, Cl. 180-79.20b.

Beaumont, Alan. Apparatus for duplicating magnetic tapes and applying cue indicia to the non-recording surface of the slave tape. 3,801,750, Cl. 360-15.000.

Beaver, Jeffrey B.; Gaulet, Real J.; and Zion, Julius: *See*—
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Beckershoff, Wolfgang, to Brown Boveri-Sulzer Turbomaschinen AG. Sealing element for a turbo-machine. 3,801,220, Cl. 416-198.000.

Beckman Instruments, Inc.: *See*—
Wisse, Jan Hendrik; and Vanes, Willem Lodewijk, 3,801,179.

Beer, Martin: *See*—
Gravis, Merle C.; and Beer, Martin, 3,800,644.

Beers, Ronald W., to Esso Research and Engineering Company. Antifouling coating composition. 3,801,534, Cl. 260-37.0ep.

Beerwerth, Wolfgang: *See*—
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Beharelle, Bernard. Safety device for a lock and a lock including said device. 3,800,572, Cl. 70-134.000.

Behrenz, Wolfgang: *See*—
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Belanger, Inc.: *See*—
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Belanger, James A., to Belanger, Inc. Hinge type units permanently mounted in a cylindrical hub structure with replaceable finishing packs provided for the units. 3,800,481, Cl. 51-337.000.

Belden, Ralph A.: *See*—
Belden, Ralph A., 3,801,130.

Belden, Ralph A., 40% to Belden, Ralph A., 40% to Brasseur, Philip P. and 20% to Brasseur, Eugene V. H. Bicycle with pivotable rear wheel. 3,801,130, Cl. 280-240.000.

Belgonucleaire: *See*—
Verbeke, Roger; and Heylen, Paul, 3,800,857.

Bell & Howell Company: *See*—
Way, John L., 3,801,968.

Bell, Robert C., Jr. Method of constructing a building. 3,801,685, Cl. 264-45.000.

Bell, Stanely C.; and Wei, Peter H. L., to American Home Products Corporation. 1-Acetyl-2-acetylimino-5-chloro-3-phenyl-3-indolinol, acetate. 3,801,593, Cl. 260-326.11r.

Bell Telephone Laboratories, Incorporated: *See*—
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Condon, Joseph Henry, 3,801,807.
Dyment, John Cameron; Logan, Ralph Andre; and Schwartz, Bertram, 3,801,391.
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Hamaswamy, Vellayan; and Standley, Robert Dean, 3,801,185.
Hayashi, Izuo, 3,801,928.
Lepselter, Martin Paul; and MacRae, Alfred Urquhart, 3,801,390.
Lin, Lawrence H., 3,801,792.
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Bellavita, Nera Cagnoli. Glycoside metabolites of oospora virescens (link) waller fungus. 3,801,565, Cl. 260-210.00r.

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Goran, Michael B., 3,800,599.
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McDaniel, George H., 3,801,803.
Reddy, Jonothula N., 3,800,750.
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Valentine, Harry M., 3,800,668.

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Benjamin, Milton L., to Erickson Tool Company. Quick change tool holder. 3,801,115, Cl. 279-81.000.

Benner, Robert I., to Sun Oil Company of Pennsylvania. Hydrocracking to produce light lubes. 3,801,496, Cl. 208-111.000.

Benner, Robert I., to Sun Oil Company of Pennsylvania. Process for the production of traction fluid. 3,801,497, Cl. 208-111.000.

Benner, Wolfgang. Plastic ski. 3,801,116, Cl. 280-11.131.

Bennett, Ronald E.: *See*—
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Bentley Engineering Company Limited, The: *See*—
Hanney, Philip Michael; and Staniforth, Thomas Raymond (said Staniforth assor. to), 3,800,560.

Bentley, Gustavus A., to Federal-Mogul Corporation. Hydrodynamic shaft seal of the type having a series of flat annular washers. 3,801,114, Cl. 277-134.000.

Bentz, Francis: *See*—
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Benz, Willi, to Schloemann Aktiengesellschaft. Flying guillotine shears. 3,800,646, Cl. 83-320.000.

Berber, John S.; and Rice, Richard L., to United States of America, Interior. Manufacture of lignite binder pitch. 3,801,342, Cl. 106-284.000.

Berceanu, Edmond: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Berejka, Anthony J.; and Drexler, Leonard H., to Esso Research and Engineering Company. Pressure sensitive adhesive compositions. 3,801,531, Cl. 260-33.4pq.

Berger, Abe, to General Electric Company. Amino-functional silicone compounds. 3,801,572, Cl. 260-243.00r.

Berger, Frank M.: *See*—
Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., 3,801,574.

Berger, Horst Heinz; Najmann, Knut; Pietrass, Hansgeorg; and Wiedmann, Siegfried, to International Business Machines Corporation. Monolithic bipolar transistor storage arrangement with latent bit pattern. 3,801,967, Cl. 340-173.0ff.

Berger, Robert P. Furnace closure. 3,800,716, Cl. 110-173.00r.

Bergey, John M., to Time Computer, Inc., mesne. Solid state watch with magnetic setting. 3,800,525, Cl. 58-50.00r.

Bergin, Paul F. Sink stopper. 3,800,339, Cl. 4-287.000.

Bergwerksverband GmbH: *See*—
Ahland, Erwin; and Ratajczak, Ernst-Albert, 3,800,428.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Berkowitz, Murray; and Davis, Robert C., to Curtiss-Wright Corporation. Heat exchanger. 3,800,868, Cl. 165-170.000.

Berning, Eugene B.: *See*—
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Berry, Fred M.; Shirley, James N.; and Bipsky, Eugene C., to International Medical Electronics Ltd. Short-wave therapy apparatus. 3,800,802, Cl. 128-422.000.

Berry, Stanley A.: *See*—
Simmons, Richard W.; and Berry, Stanley A., 3,801,958.
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Rolf, Walter Kaiser, 3,801,250.
Bertagni, Jose Juan. Electroacoustic transducers and electromagnetic assembly therefor. 3,801,943, Cl. 335-231.000.
Bertand, Hans Josef: *See*—
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Bertin & Cie: *See*—
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Bertini, Franco: *See*—
Minisci, Prancesco; Bertini, Franco; Galli, Remo; and Quilico, Adolfo, 3,801,580.
Bertoline, Natale; Calcagno, Benedetto; and Ghirga, Marcello, to Societa Italiana Resine S.I.R., S.p.A. Manufacture of unbranched alkyl benzenes. 3,801,665, Cl. 260-671.00b.
Bessette, Georges Henri. Variable diameter V-belt pulley assembly. 3,800,608, Cl. 74-230.17e.
Best, Clarence A. Rural delivery mailbox. 3,801,002, Cl. 232-17.000.
Bethlehem Steel Corporation: *See*—
Hughes, Charles R.; and Graham, Hugh S., 3,800,522.
Beuter, Hermann; and Planck, Alfred, Jr., to Fouquet-Werk Frauz & Planck. Cam race construction for knitting machines, particularly circular knitting machines. 3,800,561, Cl. 66-57.000.
Bevan, Robert H.; and Buffone, Vincent D., to Goulds Pumps, Incorporated. Pump inpeller. 3,801,226, Cl. 416-241.000.
Bewell, Robert G. S.; Austin, Carl C.; Halsey, Carl C.; and Smith, Myron R., to United States of America, Navy. Arming and fusing adapter. 3,800,704, Cl. 102-6.000.
Bezombes, Albert, to Saint-Gobain Industries. Supporting and tempering bent glass plates. 3,801,298, Cl. 65-104.000.
Bidlack, Harvey D.; and Mussell, Dorsey R., to Dow Chemical Company, The. 4-Chlorophenyl-2-thienyliodonium trifluoroacetate as a plant stunting agent. 3,801,301, Cl. 71-76.000.
Biel, John Hans; and Klundt, Irwin L., to Aldrich Chemical Company. Di-substituted-phenethylcarbamic acid esters. 3,801,624, Cl. 260-471.00c.
Bien, Hans-Samuel; Hohmann, Walter; Vollman, Geinrich; and Leister, Heinrich, to Bayer Aktiengesellschaft. Anthraquinone dyes. 3,801,606, Cl. 260-380.000.
Biet, Jean: *See*—
Leblond, Jean; and Biet, Jean, 3,800,605.
Biggs, Eugene S., to Dynapac, Inc. Turntable and bearing assembly. 3,800,382, Cl. 29-148.40a.
Bille, Heinz: *See*—
Petersen, Harro; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,801,546.
Billi, G., & C. S.p.A.: *See*—
Billi, Giorgio,, 3,800,563.
Billi, Giorgio,, to Billi, G., & C. S.p.A. Method of knitting closed toe hosiery. 3,800,563, Cl. 66-95.000.
Bilow, Norman: *See*—
United States of America, National Aeronautics and Space Administration, 3,801,617.
Bilow, Norman, to Hughes Aircraft Company. Making an insulated cable with polyimide tape. 3,801,393, Cl. 156-56.000.
Binnie, Edward N.: *See*—
Barker, Michael D.; Wood, Jack; and Binnie, Edward N., 3,801,586.
Bio-Research Laboratories Ltd.: *See*—
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Biocor Corporation: *See*—
Stager, Francis W.; and Minor, Robert N., 3,800,977.
Bipsky, Eugene C.: *See*—
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Birchall, James Derek; Cassidy, John Edward; and Buttrey, Douglas Norton, to Imperial Chemical Industries, Limited. Method for impregnating cellulosic substrates. 3,801,362, Cl. 117-143.00b.
Birchnall, Eric James: *See*—
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Birk, Donald G., to Royalty Designs Corporation. Invalid walker. 3,800,815, Cl. 135-45.00a.
Birresborn, Gunter: *See*—
Schoen, Erich; Drebes, Friedrich; and Birresborn, Gunter, 3,801,473.
Bishop, Arthur E. Method and apparatus for manufacturing valve components. 3,800,386, Cl. 29-157.10r.
Bishop, Gerald B., to Ford Motor Company. Spark timing control. 3,800,756, Cl. 123-117.00a.
Bishop, Peter Douglas: *See*—
English, Christopher Durrant; Fuller, Brian Robert; Bone, Geoffrey Edward; Bishop, Peter Douglas; and Birchnall, Eric James, 3,800,708.
Bither, Tom Allen, Jr., to Du Pont de Nemours, E. I., and Company. Metal boracites. 3,801,703, Cl. 423-277.000.
Bittler, Knut: *See*—
Pasedach, Heinrich; Bittler, Knut; Francke, Dilihard; and Hoffmann, Werner, 3,801,653.
Blackwell, Jennings P., to Phillips Petroleum Company. Hot water surface treatment of aluminum substrate. 3,801,379, Cl. 148-6.270.
Blackwell, Willis A.: *See*—
Riesbeck, Laverne J.; and Blackwell, Willis A., 3,800,943.
Blair, G. Richard; and Elam, Michael R., to Hughes Aircraft Company. Coated wire and method. 3,801,367, Cl. 117-231.000.
Blanchard, Eugene J.: *See*—
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,800,375.
Blank, Gerlinde Metzler: *See*—
Fanelli, Anthony Joseph; Blank, Gerlinde Metzler; and Rauch, Francis Clyde, 3,801,639.
Blankenstein, Gunter: *See*—
Kunzel, Hans Egon; Blankenstein, Gunter; Bentz, Francis; and Nischk, Gunther, 3,801,545.
Blaw-Knox Food and Chemical Equipment Inc.: *See*—
Moore, James G., 3,801,168.
Blewitt, Donald D., to Westinghouse Electric Corporation. Dropout fuse assembly including improved current limiting fuse structures. 3,801,946, Cl. 337-175.000.
Blewitt, Donald D.; and Cameron, Frank L., to Westinghouse Electric Corporation. Electric fuse with improved casing. 3,801,947, Cl. 337-246.000.
Block, Ramon M.; and Fencl, George J., to Sascha Brastoff Metal Arts Company. Process for producing ornamental figures for jewelry and resulting article. 3,801,413, Cl. 161-21.000.
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., to Caterpillar Tractor Company. Final drive decoupling and parking brake arrangement for hydrostatic loader. 3,800,901, Cl. 180-9.620.
Bloom, Stanley M.: *See*—
Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., 3,801,318.
Blytas, George C., to Shell Oil Company. Styrene separation from ethylbenzene. 3,801,664, Cl. 260-669.00a.
Blytas, George C., to Shell Oil Company. Concentrated cuprous nitrate/propionitrile solutions as complexing agents for olefin separations. 3,801,666, Cl. 260-677.00a.
Bobst, J., & Fils S.A.: *See*—
Wiedemann, Fritz; and Gyertyanffy, Valentin, 3,800,678.
Bode, Charles H., Jr., to United States Steel Corporation. Quick release mechanism for continuous casting coolant coupling pipes. 3,800,854, Cl. 164-283.000.
Boehringer Ingelheim GmbH: *See*—
Seeger, Ernst; Kahling, Joachim; and Encel, Wolfhard, 3,801,592.
Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Engelhardt, Gunther, 3,801,654.
Boeing Company, The: *See*—
Simpson, Robert D.; Boone, Jimmie H.; and Chenkovich, Gary A., 3,801,049.
Stark, Donald R.; and Hirsch, Irving A., 3,800,727.
Bogle, Norman; and Machtolf, Hans. Power tool for the application of screws or the like. 3,800,839, Cl. 144-32.000.
Bogue, John C.: *See*—
Mauch, Robert E.; and Sarbacher, Robert I., 3,801,794.
Bohannon, Bill. Closurer plate for converting a cement mixer to a sand pumping truck. 3,800,976, Cl. 220-31.00r.
Bohme, Reinhard D., to Dow Chemical Company, The. Making fibrillar masses of acidic copolymers. 3,801,551, Cl. 260-80.800.
Boice, G. Newton, to Structural Systems, Inc. Modular wall construction. 3,800,489, Cl. 52-208.000.
Boileau, Jacques, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Radial tire with additional sidewall reinforcement. 3,800,844, Cl. 152-356.000.
Boiteau, Maurice R.: *See*—
Simpson, Philip J., 3,801,233.
Boliden Aktiebolag: *See*—
Dahlgren, Sven-Eric, 3,801,360.
Bolle, Robert Seraphin Victor. Spectacle frame with split bridge and clip-on means for securing same. 3,801,189, Cl. 315-92.000.
Boller, William A. Bomb recovery and shield apparatus. 3,800,715, Cl. 109-49.500.
Bolt Associates, Inc.: *See*—
Chelminski, Stephen V., 3,800,907.
Bondar, Viktor Stepanovich: *See*—
Yavorsky, Arsenty Vasilievich; Tkachuk, Rostislav Arsentievich; Ostapchuk, Jury Grigorievich; Farber, Grigory Lvovich; Bondar, Viktor Stepanovich; and Pryalochnikov, Gennady Vasilievich, 3,801,238.
Bone, Geoffrey Edward: *See*—
English, Christopher Durrant; Fuller, Brian Robert; Bone, Geoffrey Edward; Bishop, Peter Douglas; and Birchnall, Eric James, 3,800,708.
Bonora, Aldo L. Kitchen cleaning utensil. 3,800,352, Cl. 15-105.000.
Boone, Jerry C., to Allis-Chalmers Corporation. Double outlet transverse fan. 3,800,804, Cl. 130-27.0nf.
Boone, Jimmie H.: *See*—
Simpson, Robert D.; Boone, Jimmie H.; and Chenkovich, Gary A., 3,801,049.
Boonen, Henry: *See*—
Toussaint, Robert; and Boonen, Henry, 3,801,297.
Booth, Albert B., to Hercules Incorporated. Method of preparing monoalcohols from p-menthane-3,4-diol and p-menthane-1,2-diol. 3,801,655, Cl. 260-631.00h.
Booth, Alexander Norval, Jr.: *See*—
Levesque, George Napoleon; and Booth, Alexander Norval, Jr., 3,800,473.

Booth, Frank B., to Union Oil Company of California. Startup of rhodium catalyzed hydroformylation reactions. 3,801,646, Cl. 260-604.0hf.

Boots Pure Drug Company Limited: *See*—
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,801,468.

Borg-Warner Corporation, mesne: *See*—
Baranauckas, Charles F.; and Gordon, Irving, 3,801,677.
Ludington, Ralph S., 3,801,682.

Borner, Manfred; Guttmann, Joachim; Loffler, Werner; and Gruchmann, Dietmar, to Licentia Patent-Verwaltungs-G.m.b.H. Apparatus for aligning two optical components. 3,800,388, Cl. 29-200.00p.

Bosch, Robert, G.m.b.H.: *See*—
Klaiber, Erich; Stockle, Hans; and Domann, Helmut, 3,800,755.
Kobald, Walter, 3,800,672.
Luders, Rudeger; Negele, Richard; and Ruhle, Walter, 3,800,925.
Lutz, Gerhard; and Veil, Karl, 3,800,673.
Nusser, Hermann; Van Elden, Hendricus; and Ebert, Jurgen, 3,801,231.

Bossert, Heinz: *See*—
Guttmann, Stephan; Pless, Janos; and Bossert, Heinz, 3,801,561.

Boto, Louis, to United States Steel Corporation. Apparatus for forming a refractory nozzle body. 3,801,058, Cl. 249-142.000.

Boulton, Richard C., to Grace, W. R., & Co. Chuck for crown closure lining apparatus. 3,800,741, Cl. 118-50.000.

Bourgraf, Elroy E.; and Self, Kenneth R., to Ferno-Washington, Inc. Pivot locking means. 3,801,208, Cl. 403-95.000.

Bourns, Inc.: *See*—
Goeppinger, Edward J.; and Guthrie, David E., 3,801,776.

Bowcut, Donal L. Action jeans. 3,800,330, Cl. 2-227.000.

Bowen, Paul E.; and Evans, Leigh D., to Continental Can Companu, Inc. Horizontal heat-seal liner for fibre drums. 3,800,994, Cl. 229-14.00b.

Bowman, Robert S., to St. Joe Minerals Corporation. Bicharge zinc oxide. 3,801,316, Cl. 96-1.500.

Bowmar Instrument Corporation: *See*—
Steele, Gilbert V., 3,801,844.

Boyden, Thomas F.: *See*—
Moore, Thomas M.; and Boyden, Thomas F., 3,801,494.

Boyer, John Albert; Ludwig, David Paul; and Zwickel, Friedrich, to Western Electric Company, Incorporated. Method for compliant bonding. 3,800,409, Cl. 29-493.000.

Boyer, Wesley D., to Ford Motor Company. Signal amplification circuit with phase detecting means and variable signal level recognition means. 3,801,830, Cl. 307-235.00r.

BP Chemicals International Limited: *See*—
Brown, Peter John Nicholas, 3,801,658.

Bradley, M. P. Timothy, to Standard Oil Company, The. Gas sampling apparatus for chromatographs. 3,800,593, Cl. 73-422.0gc.

Brafford, Donald A., to Beloit Corporation. Covered roll for paper making. 3,800,381, Cl. 29-132.000.

Brandstetter, Robert; and Robin, Marcel, to Commissariat a l'Energie Atomique. Removable top shield for a nuclear reactor core. 3,801,448, Cl. 176-40.000.

Branson, Charles D.; and Genbauffe, Francis S., to Robertshaw Controls Company. Oven control system and parts therefor or the like. 3,801,007, Cl. 236-15.00a.

Brasseur, Eugene V. H.: *See*—
Belden, Ralph A., 3,801,130.

Brasseur, Philip P.: *See*—
Belden, Ralph A., 3,801,130.

Braudo, Evgeny Evgenievich: *See*—
Tolstoguzov, Vladimir Borisovich; Mzhelsky, Alexandr Ivanovich; Ershova, Vera Alexandrovna; Braudo, Evgeny Evgenievich; and Mikheeva, Natalia Vasilievna, 3,801,713.

Braun, Eberhard: *See*—
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,800,526.

Braun, William V.; and Bruckert, Eugene J., to Motorola, Inc. Digital sequence detector using multiple samples during each digit time period. 3,801,956, Cl. 340-146.200.

Breaux, Onezime P., to United States of America, Air Force. Stabilized, optimizable, gaseous electrical discharge. 3,801,202, Cl. 356-85.000.

Brehm, Ronald Carl; Folkenroth, Earl Ernest; and Wagner, Earl William, to AMP Ubciroirated. Electrical lead and harness manufacturing. 3,800,389, Cl. 29-203.00d.

Breiter, Fritz, to Langendorf Watch Company. Wobble riveting machine. 3,800,579, Cl. 72-67.000.

Brennan, James Norton; and Mitchell, Americus, to Continental Can Company, Inc. Sonic stylizing apparatus. 3,800,578, Cl. 72-56.000.

Brenner, Robert R. Simulated flight indicator panel. 3,800,467, Cl. 46-1.00b.

Brewer, Howell K.; and McCown, Oral S. Thermocouple assembly having a fatigue resistant lead wire configuration. 3,801,377, Cl. 136-233.000.

Brichard, Claude: *See*—
Lambert, Michael; Neuzy, Hubert; and Brichard, Claude, 3,801,296.

Brichard, Claude, to Glaverbel S.A. Glass drawing method, apparatus, and glass article. 3,801,411, Cl. 161-1.000.

Brichard, Claude, to Glaverbel S.A. Manufacture of flat glass. 3,801,412, Cl. 161-1.000.

Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, to Glaverbel S.A. Apparatus for forming refractory masses. 3,800,983, Cl. 222-52.000.

Bricmont & Associates, Inc.: *See*—
Bricmont, Francis H., 3,801,265.

Bricmont, Francis H., to Bricmont & Associates, Inc. Furnace and cooling control therefor. 3,801,265, Cl. 432-42.000.

Bright, Gordon S.: *See*—
Cross, Edward A.; and Bright, Gordon S., 3,801,506.

Brigmanis, Edmund; and Maranci, Arutun. Wet-spinning process for tough, ribbon-shaped, acrylonitrile polymer fibers. 3,801,691, Cl. 264-177.00f.

Brill-Edwards, Harry W., to Chromalloy American Corporation. Method for coating heat resistant alloys. 3,801,353, Cl. 117-71.00m.

Brinckman, Eric Maria; Heugebaert, Frans Clement; and Ceulemans, Renaat Andreas, to Agfa-Gevaert N.V. Photographic silver halide recording material. 3,801,330, Cl. 96-66.00t.

Bristol, Thomas W., to Hughes Aircraft Company. Acoustic pulse compression weighting filter transducer. 3,801,937, Cl. 333-72.000.

British Nuclear Design & Construction Limited: *See*—
Walker, Alexander; and Williams, Michael Roger Lloyd, 3,801,442.

British Oxygen Company Limited, The: *See*—
Power, Basil Dixon, 3,801,225.

Brittain, William J.; and Lindre, Jaan, to Ford Motor Company. Electro-chemical odometer. 3,801,916, Cl. 324-182.000.

Broadhead, John Arthur, to English Electric Valve Company Limited. Microwave gas discharge switching tubes. 3,801,859, Cl. 315-39.000.

Brodof, Terry A., to Dow Chemical Company, The. Aqueous suspension polymerization in the presence of C_2-C_4 hydroxyalkyl carboxymethyl cellulose ethers as dispersing agents. 3,801,519, Cl. 260-17.00r.

Brody, Samuel, 1/2 to Dumit, Joseph P. Tissue package holder and dispenser. 3,801,056, Cl. 248-205.000.

Brooks, Geoffrey O.: *See*—
Horsewell, Harry G.; Phelpstead, James W. P.; and Brooks, Geoffrey O., 3,800,805.

Brooks, Houston George, Jr., to American Cyanamid Company. Cobalt dicycl ohexyldithiophosphinate stabilization of polyolefins. 3,801,539, Cl. 260-45.75r.

Broski, Thomas J.: *See*—
West, Thomas G.; Collins, James R.; and Broski, Thomas J., 3,801,867.

Brothers, Jack Ray: *See*—
Montigny, Joseph William; and Brothers, Jack Ray, 3,801,074.

Brovedan, Antonio: *See*—
Portinari, Giovanni; Giovanni, Sesto San; and Brovedan, Antonio, 3,801,729.

Brown & Sharpe Manufacturing Company: *See*—
Levesque, George Napoleon; and Booth, Alexander Norval, Jr., 3,800,473.

Brown & Williamson Tobacco Corporation: *See*—
Banks, Jon F., 3,800,806.
Horsewell, Harry G.; Phelpstead, James W. P.; and Brooks, Geoffrey O., 3,800,805.
Reynolds, Martin Lance; and Hammersmith, James R., 3,800,808.

Brown Boveri-Sulzer Turbomaschinen AG.: *See*—
Beckershoff, Wolfgang, 3,801,220.

Brown, Lester H. Building ventilating system. 3,800,689, Cl. 98-115.00k.

Brown, Peter John Nicholas, to BP Chemicals International Limited. Isomerisation process. 3,801,658, Cl. 260-654.00r.

Brown, Raymond L. Pumping apparatus and method. 3,801,230, Cl. 417-403.000.

Brown, Richard J., to Tri-Men Manufacturing, Inc. Temperature-compensated, thermal-activated time delay switch. 3,801,944, Cl. 337-103.000.

Brownrigg, John D.: *See*—
Howell, Clarence F.; Brownrigg, John D.; and Cooper, George H., 3,800,507.

Broxholm, Thomas M.; and Elmore, Lester C., to Pulsepower Systems Incorporated. Modular liquid propellant gun. 3,800,657, Cl. 89-7.000.

Bruckert, Eugene J.: *See*—
Braun, William V.; and Bruckert, Eugene J., 3,801,956.

Bruderer, Werner: *See*—
Knell, Bernhard; and Bruderer, Werner, 3,800,849.

Bruderlin, John Wilfred, to Lynx Engineering (Sales) Pty. Limited. Petrol engine and intake manifold. 3,800,752, Cl. 123-52.00m.

Bruggert, Paul. Clip for attaching stalks to a wire or other like elongated supported member. 3,800,365, Cl. 24-73.0hl.

Brunswick Corporation: *See*—
Sullivan, Patrick R.; Leidgen, George W.; and Hubbell, James C., 3,800,753.

Bryant, Joe E. Disposable protective shoe cover. 3,801,868, Cl. 317-2.00b.

Buchel, Karl-Heinz: *See*—
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., 3,801,590.
Meiser, Werner; Behrenz, Wolfgang; and Buchel, Karl-Heinz, 3,801,712.

Buchholtz, Theodore: *See*—
Allen, Michael George; Buchholtz, Theodore; and Tiers, George Van Dyke, 3,801,421.

Buchner, Robert Bertold, to U.S. Philips Corporation. Telecommunication system with multi-frequency signalling combination generated from a plurality of signal samples stored for each combination. 3,801,746, Cl. 179-15.0by.

Buck, Robert W., to Coors Porcelain Company. Method for metalizing ceramic. 3,801,363, Cl. 117-160.00r.

Buendia, Jean: *See—*
Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,801,623.

Buffone, Vincent D.: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,801,226.

Bukey, John R.: *See—*
Smith, Walter J.; and Bukey, John R., 3,801,521.

Bulat, Thomas J.: *See—*
Sollami, Blase J.; Bulat, Thomas J.; and Dray, Walter L., 3,800,552.

Bulkley, Dewey. Moving artistic display device. 3,800,451, Cl. 40-34.000.

Bunger, David A., to Baldwin, D. H., Company. Monophic electronic music system with apparatus for special effect tone simulation. 3,801,721, Cl. 84-1.190.

Bunker Ramo Corporation: *See—*
Dorrell, Robert F., 3,801,954.

Buonaura, Anthony, to Formica Corporation. Shower receptor. 3,800,335, Cl. 4-146.000.

Burke Concrete Accessories, Inc.: *See—*
Holt, Jack A., 3,801,061.

Burke, Hubert K.: *See—*
Eichelberger, Charles W.; and Burke, Hubert K., 3,801,820.

Burns, Oliver W.: *See—*
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Burroughs Corporation: *See—*
Chen, Kun-Chao C., 3,801,963.
Lee, James Y., 3,801,863.
Von Glahn, William F.; and Shell, Ronald G., 3,801,804.

Bush, Glenn W.: *See—*
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Bush, Robert E.: *See—*
Herd, David P.; Fowler, John H.; Drouin, Andre H.; and Bush, Robert E., 3,800,869.

Buthe, Theo; and Geisthoff, Hubert, to Walterscheild, Jean, GmbH, mesne. Telescoping drive shaft. 3,800,558, Cl. 64-23.700.

Butler, Carl T.: *See—*
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.

Butte, Walter A., Jr.; and Scudder, Philmore M., to Sun Research and Development Company. Nitrile process. 3,801,619, Cl. 260-465.00c.

Buttrey, Douglas Norton: *See—*
Birchall, James Derek; Cassidy, John Edward; and Buttrey, Douglas Norton, 3,801,362.

Buzzard, Clair Alan; and Drew, Louis Edward, to Bell Telephone Laboratories, Incorporated. Light pen circuit and remote noise-immune pulse detector for raster scan CRT display system. 3,801,740, Cl. 178-6.800.

Bykhovsky, David Grigorievich. Device for producing jets of liquid metal. 3,801,223, Cl. 417-50.000.

Cadmus, Eugene L., to Ventron Corporation. Organic mercury compositions. 3,801,332, Cl. 106-15.0af.

Caiola, Leonard, to Information Utilization Corporation. Apparatus for screening cytological specimens. 3,801,783, Cl. 250-303.000.

Calcagno, Benedetto: *See—*
Bertoline, Natale; Calcagno, Benedetto; and Ghirga, Marcello, 3,801,665.

Calderon, Nissim: *See—*
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Calderon, Reynaldo: *See—*
Umphenour, Charles F.; and Calderon, Reynaldo, 3,800,832.

Calvin, Louis E.: *See—*
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Cambridge Scientific Instruments Limited: *See—*
Denney, Ernest James; and Stokes, Richard William, 3,801,806.

Cameron, Frank L.: *See—*
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Campbell Soup Company: *See—*
Ramsay, Joseph D.; and Weaver, George R., 3,800,893.

Canadian General Electric Company, Limited: *See—*
Howard, John Francis, 3,801,945.
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Canon Camera Kabushiki Kaisha: *See—*
Tanaka, Hiroshi; and Komiya, Takao, 3,801,317.

Canon Kabushiki Kaisha: *See—*
Akiyama, Mikio; and Yoshii, Isao, 3,801,197.
Ichiyanagi, Toshikazu, 3,801,890.
Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzaki, Kuniyoshi, 3,801,040.

Cantales, Joseph. Sprinkler cover. 3,801,014, Cl. 239-104.000.

Carissimi, Vincent L.; and Jaconette, Frank C., Jr., to Hubbell, Harvey, Incorporated. Heavy duty connector. 3,801,757, Cl. 200-50.00b.

Carleton, James T.: *See—*
Putman, Richard E.; and Carleton, James T., 3,801,426.

Carley, Adam Loran. Fountain solution image apparatus for electronic lithography. 3,800,699, Cl. 101-147.000.

Carley, Jay L.: *See—*
Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., 3,801,408.

Carlson, Lowell D.; Reese, Gerald D.; and Shank, Gerald G., to Textron Inc. Engine fuel injection system. 3,800,754, Cl. 123-73.0cb.

Carlsson, Bengt Johan. Method in the manufacture of lignocellulosic fibreboard. 3,801,434, Cl. 162-201.000.

Carr, Allan W.; and Wellman, Donald C., to Carrier Corporation. Electrostatic precipitator. 3,800,509, Cl. 55-131.000.

Carr, George P.: *See—*
Gundlach, Robert W.; Mammino, Joseph; Amidon, Alan B.; and Carr, George P., 3,801,315.

Carrier Corporation: *See—*
Carr, Allan W.; and Wellman, Donald C., 3,800,509.

Carson, John Robert, to McNeil Laboratories, Inc. 5-Aroyl-furans. 3,801,605, Cl. 260-347.300.

Carswell, Theodore R., to Pilot Research Corporation, mesne. Yarn plating method and apparatus for circular knitting machines. 3,800,564, Cl. 66-136.000.

Carter-Wallace, Inc.: *See—*
Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., 3,801,574.

Cass, Carroll J.: *See—*
Hoxeng, Julian S., 3,800,336.

Cassella Farbwerke Mainkur-Aktiengesellschaft: *See—*
Loewe, Walther; Cossmann, Karl-Heinz; and Meyer, Ernst, 3,801,587.

Casserley, Barrie, to Triplex Safety Glass Company Limited. Processing of laminated transparent panels. 3,801,397, Cl. 156-99.000.

Cassey, Harold C. Swimming pool light system. 3,801,022, Cl. 240-26.000.

Cassidy, John Edward: *See—*
Birchall, James Derek; Cassidy, John Edward; and Buttrey, Douglas Norton, 3,801,362.

Castagna, John Frank, to Optasound Corporation. Brake system to battery operated recorders. 3,800,562, Cl. 188-161.000.

Castellucci, Nicholas T.; and Krouskop, Ned C., to Pittsburgh Corning Corporation. Process and apparatus for solar distillation utilizing cellular ceramic nodules to improve the evaporation rate. 3,801,474, Cl. 203-10.000.

Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., to International Business Machines Corporation. Common emitter transistor integrated circuit structure. 3,801,836, Cl. 307-303.000.

Cata-Sep, Inc.: *See—*
Fowler, Leslie L., 3,800,945.

Caterpillar Tractor Co.: *See—*
Coleman, Donald F.; and Fuzzell, Joe E., 3,800,671.

Caterpillar Tractor Company: *See—*
Beals, Duane L.; and Peifer, Gary S., 3,800,903.
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.
Duncanson, William T.; and Kennedy, James C., Jr., 3,800,909.
Gianessi, Albert, 3,800,885.
Glassey, Stephen F.; Hahn, Allan C.; and Shellenbaum, Dale L., 3,800,751.
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,800,670.
Meinold, Lloyd K.; and Helton, Eugene L., 3,801,210.
Schmitt, James L., 3,800,913.
Sindelar, Ernest C.; and Smith, Duane R., 3,800,541.
Wilson, Walter A.; and Bush, Glenn W., 3,801,349.

Cawley, Leo P. Stabilizing media template. 3,801,491, Cl. 204-299.000.

Cayol, Andre; and Clottes, Georges, to Commissariat a l'Energie Atomique. Nuclear reactor fuel element. 3,801,449, Cl. 176-68.000.

Cazan, Cornel: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Cedar, Raymond J., to Ford Motor Company. Temperature sensitive anti-dieseling control. 3,800,759, Cl. 123-117.00a.

Celanese Corporation: *See—*
Droin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,801,404.
Freed, William T., 3,801,530.
Lamond, Lee T., 3,800,510.
Levers, William E.; and Keith, Charles H., 3,800,676.
Vogt, Clifford M.; Soehngen, John W.; and Polise, Joseph C., 3,801,400.
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Centenary Central, Inc.: *See—*
Sauer, Louis E.; and Miller, Orville C., 3,800,421.

Centre d'Etude de L'Energie Nucleaire: *See—*
Verbeke, Roger; and Heylen, Paul, 3,800,857.

Centre d'Etudes et de Recherches de la Machine-Outil: *See—*
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Centre-de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie: *See—*
Coets, Christian, 3,801,304.

Centrul de Chimie Timisoara: *See—*
Schmidt, Walter-Ernest; and Vilceanu, Radu, 3,801,579.

Cerasari, Nicholas P. Floating boom. 3,800,542, Cl. 61-1.00f.

Cernocky, Jiri: *See—*
Riha, Miloslav; Vystrcil, Karel; Cernocky, Jiri; and Zgarda, Milan, 3,800,835.
Cerwonka, Edward J., to GAF Corporation. Triacrylyldiethylenetriamine, method of producing the same, and photopolymerization process and system utilizing the same. 3,801,638, Cl. 260-561.00n.
Ceulemans, Renaat Andreas: *See—*
Brinckman, Eric Maria; Heugebaert, Frans Clement; and Ceulemans, Renaat Andreas, 3,801,330.
Chafghaichi, Majid: *See—*
Baker, Theodore H.; Chafghaichi, Majid; and Stevens, Richard C., 3,801,905.
Champion, Wendell G.: *See—*
DeGood, Maynard J.; and Champion, Wendell G., 3,800,709.
Chant, Donald L. Bean puller. 3,800,879, Cl. 171-104.000.
Chapin, Gordon C., to Kelsey-Hayes Company. Method and apparatus for manufacturing vehicle wheels. 3,800,600, Cl. 73-141.00r.
Charter Manufacturing Company, Inc.: *See—*
Puchner, William R., 3,800,396.
Chaulet, Roger Louis; Guichard, Claude Pierre Albert Louis; Menissier, Pierre Lucien; and Soret, Jean-Claude Georges, to Societe Anonyme: Societe Industrielle de Combustible Nucleaire. Method for continuous vacuum casting of metals or other materials. 3,80,848, Cl. 164-64.000.
Cheetham, Ian, to Imperial Chemical Industries Limited. Exhaust dying synthetic textile material from an aqueous halogenated hydrocarbon bath. 3,801,269, Cl. 8-39.000.
Chelminski, Stephen V., to Bolt Associates, Inc. Displaceable diaphragm structures for use in seismic impulse transmission. 3,800,907, Cl. 181-.5nc.
Chemcut Corporation: *See—*
Shakley, Conrad Dale, 3,801,387.
Chemische Werke Huls Aktiengesellschaft: *See—*
Roll, Harry; Wergau, Jorg; and Dockhorn, Walter, 3,801,560.
Chen, Kun-Chao C., to Burroughs Corporation. Method and apparatus for transferring data from a volatile data store upon the occurrence of a power failure in a computer. 3,801,963, Cl. 340-172.500.
Chenkovich, Gary A.: *See—*
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Chevron Research Company: *See—*
Gogle, George D., 3,801,495.
Hartmann, Lester M., 3,801,503.
Hendrickson, Yngve Gust; and King, John M., 3,801,507.
Kurkov, Victor P.; Lapporte, Seymour J.; and Toland, William G., 3,801,627.
Magee, Philip S., 3,801,680.
Olson, Lloyd J., 3,801,515.
Smith, Calvin S.; and McLeod, William J., 3,801,708.
Walker, James H., 3,801,618.
Chicago Bridge & Iron Company: *See—*
Delahunty, Terry Wayne, 3,800,550.
Child, Francis W.: *See—*
Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., 3,800,403.
Chin, Wesley Seu Cheng. Flexible plastic greenery simulating matting assembly. 3,801,414, Cl. 161-21.000.
Chinn, Von Zill. Hard boiled egg slicing apparatus. 3,800,649, Cl. 83-651.100.
Chinoin-Gyogyszer Es Vegyeszeti Termekek: *See—*
Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszio, 3,801,578.
Chisholm, Douglas S.: *See—*
Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Turner, Alfrey, Jr., 3,801,429.
Chisholm, John P. Integrated collision avoidance, DME, telemetry, and synchronization system. 3,801,979, Cl. 343-6.51c.
Christiansen, Virve Oivikki: *See—*
Dahlberg, Jan Anders; and Christiansen, Virve Oivikki, 3,801,659.
Christmann, Harold F., to Petro-Tex Chemical Corporation. Purification of hydrocarbons. 3,801,669, Cl. 260-680.00e.
Chromalloy American Corporation: *See—*
Brill-Edwards, Harry W., 3,801,353.
Chuang, Vincent T., to Union Carbide Corporation. Color reduction process. 3,801,615, Cl. 260-448.80r.
Chudey, Ivan: *See—*
Wawra, Carl Martin; and Chudey, Ivan, 3,800,589.
Church, Nathan Lewis; and Schelleng, Robert Douglas, to International Nickel Company, Inc., The. Method of introducing rare earth metals into addition alloys. 3,801,311, Cl. 75-168.00j.
Chyung, Chi-Kwun: *See—*
Beall, George H.; Chyung, Chi-Kwun; and Watkins, Harry J., 3,801,295.
CH_2, Inc.: *See—*
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Ciba-Geigy AG: *See—*
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Nachbur, Hermann; and Maeder, Arthur, 3,801,678.
Ciba-Geigy Corporation: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,801,540.
Harris, Roger Lawrence Newton; and Spaun, Rodiger, 3,801,583.
Heusler, Karl; and Woodward, Robert Burns, 3,801,567.
Lohmann, Dieter; and Greber, Gerd, 3,801,614.
Payot, Pierre H.; and Gatzi, Karl, 3,801,641.
Reichel, Erika; and Gatzi, Karl, 3,801,571.
Rossi, Alberto, 3,801,581.
Claes, Frans Henri, to Agfa-Gevaert. Continuous method of preparing silver halide emulsions. 3,801,326, Cl. 96-114.700.
Clark, John M., Jr.: *See—*
Melton, Rosser B., Jr.; Clark, John M., Jr.; Mathis, Ronald J.; Weatherford, William D., Jr.; and Wood, Charles D., III, 3,801,346.
Clark, Marion A. Variable speed sprocket drive. 3,800,613, Cl. 74-244.000.
Clark, Ray, to Applied Power Industries, Inc. Proportional force amplifier. 3,800,663, Cl. 91-49.000.
Clayton, Henry C. Hose clamp tool. 3,800,634, Cl. 81-9.300.
Cleereman, Kenneth J.: *See—*
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Cleveland Range Company, The: *See—*
Mecredy, James R., 3,800,829.
Cline, Carl F.; and Wilkins, Mark L. Composition for cutting tool. 3,800,380, Cl. 29-95.00r.
Clinton, William D., to Signet Controls, Inc. Three-sphere prover interchange. 3,800,587, Cl. 73-3.000.
Clorox Company, The: *See—*
Kemp, Charles E., 3,800,987.
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Cayol, Andre; and Clottes, Georges, 3,801,449.
Coach and Car Equipment Corporation: *See—*
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Coats, J. & P., Limited: *See—*
Gray, Robert Borland, 3,801,276.
Cobbledick, David S., to General Tire & Rubber Company, The. Heat compressible polyetherurethane foams. 3,801,687, Cl. 264-54.000.
Coca-Cola Company, The: *See—*
Huffman, Carl Franklin, 3,801,717.
Cochran Western Corporation: *See—*
Duerksen, Arnold, 3,800,556.
Coets, Christian, to Centre-de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie. Processes for the conversion of iron into steel. 3,801,304, Cl. 75-60.000.
Coghill, Timothy L., to Precision Metalsmiths, Inc. Metal casting apparatus with means for evacuating mold chamber and fouring chamber. 3,800,851, Cl. 164-255.000.
Cohen, Arthur M., to Airport Corporation. Dashpot assembly with sheath having built-in valve. 3,800,921, Cl. 188-298.000.
Cohen, Marvin: *See—*
Von Strandtmann, Maxmilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,801,644.
Cohen, Noal, to Hoffmann-La Roche Inc. Substituted aminospirothiazines. 3,801,573, Cl. 260-243.00r.
Coldie, Harry, to United States of America, Air Force. Microwave high power phase shifter utilizing cascaded directional couples and plasma thyratons. 3,801,932, Cl. 333-31.00a.
Cole, Edward L.: *See—*
Hess, Howard V.; and Cole, Edward L., 3,800,950.
Cole, John J.: *See—*
Piffath, Rodney S.; and Cole, John J., 3,800,979.
Coleman, Donald F.; and Fuzzell, Joe E., to Caterpillar Tractor Co. Driver circuit for speeding response of remotely controlled apparatus. 3,800,671, Cl. 91-459.000.
Colgate Palmolive Company: *See—*
Fischer, Charles F., 3,801,248.
Collin, Herbert S. Hanger support. 3,800,960, Cl. 211-124.000.
Collins, James R.: *See—*
West, Thomas G.; Collins, James R.; and Broski, Thomas J., 3,801,867.
Collins, John W. Barge. 3,800,723, Cl. 114-26.000.
Collins, Robert F., to Kendall Company, The. Surgical drape with protected access opening. 3,800,790, Cl. 128-132.00d.
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, to Searle, G. D., & Co. Stereospecific microbiological hydrolysis process. 3,801,459, Cl. 195-30.000.
Combustion Engineering, Inc.: *See—*
Harris, Lewis Karl, 3,801,064.
West, John M., 3,801,734.
Comer, William T.; and Roth, Herbert R., to Mead Johnson & Company. 2'-Hydroxy-5'-[1-hydroxy-2(2-methyl-1-phenyl-2-propylamino) ethyl]methanesulfonanilide and its salts. 3,801,631, Cl. 260-501.190.
Commissariat a l'Energie Atomique: *See—*
Brandstetter, Robert; and Robin, Marcel, 3,801,448.
Cayol, Andre; and Clottes, Georges, 3,801,449.
Communications Patents Limited: *See—*
Gabriel, Ralph Parton, 3,801,735.
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Duroux, Jean; and Zahaczewski, Michel, 3,801,896.
Compagnie Francoise des Petroles France: *See—*
Lepage, Alain M., 3,800,722.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Boileau, Jacques, 3,800,844.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Compagnie Maritime d'Expertises: *See—*

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Concast AG: *See—*
Knell, Bernhard; and Bruderer, Werner, 3,800,849.
Neumann, Friedhelm; and Zeller, Josef K., 3,800,853.
Conch International Methane Limited: *See—*
Jackson, Robert G., 3,800,970.
Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Shift register having (N/2 Δ - 1) stages for digitally synthesizing an N-phase sinusoidal waveform. 3,801,807, Cl. 235-197.000.
Consiliul National Pentru Stiinta si Tehnologie: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Container Corporation of America: *See—*
Austin, Timothy K., 3,801,266.
Conte, John. Building structure for floors and roofs. 3,800,490, Cl. 52-250.000.
Continental Can Companu, Inc.: *See—*
Bowen, Paul E.; and Evans, Leigh D., 3,800,994.
Continental Can Company, Inc.: *See—*
Brennan, James Norton; and Mitchell, Americus, 3,800,578.
Raatz, Helmuth E.; and Melzer, Eugene, 3,800,501.
Continental Oil Company: *See—*
Pace, Gerald F.; and Shortridge, Earl W., 3,801,694.
Radd, Frederick J.; Oertle, Donald H.; and Wolee, Louis H., 3,801,158.
Yost, Marvin E., 3,800,944.
Contromatics Corporation: *See—*
Arn, Fred A.; Dowicki, William J.; and Pierce, Howard E., 3,801,062.
Conwicke, Joel Alfred, to Du Pont de Nemours, E. I., and Company. Sintering aids for producing alumina dielectric compositions cofireable with palladium. 3,801,337, Cl. 106-73.400.
Cook, Albert W.; and Dernovshek, Joseph F., to Goodyear Tire & Rubber Company, The. Graphite and/or carbon disk with removable wear faces. 3,800,392, Cl. 29-401.000.
Cook, George W.: *See—*
Milne, David T.; and Cook, George W., 3,801,918.
Cook, Richard L., to Goodyear Aerospace Corporation. Self-sealing container. 3,801,425, Cl. 161-190.000.
Coombe, Thomas R., to Reuters Limited. System for providing a video display having differing video display formats. 3,801,961, Cl. 340-154.000.
Cooper, George H.: *See—*
Howell, Clarence F.; Brownrigg, John D.; and Cooper, George H., 3,800,507.
Coors Porcelain Company: *See—*
Buck, Robert W., 3,801,363.
Cope, Andrew Passmore; and Cope, Steven Andrew, to Du Pont de Nemours, E. I., and Company. Apparatus for making convolute wound structures. 3,801,401, Cl. 156-172.000.
Cope, Steven Andrew: *See—*
Cope, Andrew Passmore; and Cope, Steven Andrew, 3,801,401.
Coppens, Guillaume, to Solvay & Cie. Polymerizable vinyl chloride from 1,2-dichlorethane pyrolysis products. 3,801,660, Cl. 260-656.00r.
Corderoy, Henry Morgan, to ACI Operations Pty. Limited. Apparatus for assembling cartons and like containers. 3,800,681, Cl. 9-11-72.
Corkery, Gregory O'C.; and Diehl, Raymond A., to Arundale Manufacturers, Inc. Method of welding thermoplastics to prevent warping. 3,801,405, Cl. 156-306.000.
Corman, James C.; Edgar, Robert F.; McLaughlin, Michael H.; and Tompkins, Russell E., to General Electric Company. Rotating electrical machine having rotor and stator cooled by means of heat pipes. 3,801,843, Cl. 310-52.000.
Cornelis, Clarence C.; and Hanna, Harry A., to United States of America, Atomic Energy Commission. Transparent anti-static device. 3,801,418, Cl. 161-43.000.
Cornelius, Victor W. Removable vehicle tray. 3,800,939, Cl. 206-19.50r.
Corning Glass Works: *See—*
Beall, George H.; Chyung, Chi-Kwun; and Watkins, Harry J., 3,801,295.
Schultz, Peter C.; and Voorhees, Francis W., 3,801,294.
Wiley, Robert F., 3,801,289.
Wise, Warren M., 3,801,486.
Corrette, Richard H.: *See—*
Simons, Leon; Lessig, Samuel H., Jr.; and Corrette, Richard H., 3,800,585.
Cory Corporation: *See—*
Karlen, Harvey R.; Eberstein, Ralph; and Herbsthofer, Franz L., 3,800,988.
Coscia, Giovanni A., to Societe Genetale Conseil SO. GE. Co. Combination of a press for moulding plastic materials. rubber and the like and a cleaning device incorporated integrally in the press. 3,801,251, Cl. 425-229.000.
Cosma, Dante: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Cossmann, Karl-Heinz: *See—*
Loewe, Walther; Cossmann, Karl-Heinz; and Meyer, Ernst, 3,801,587.
Cotten, Whitworth W., Jr., to Harris-Intertype Corporation. High speed signal multiplexer. 3,801,748, Cl. 179-15.00a.
Cotter, William L., to Gulf & Western Manufacturing Company, mesne. Ultrasonic alarm circuit. 3,801,977, Cl. 340-258.00a.
Cotton, Incorporated: *See—*
Gamarra, Jose P.; and Swidler, Ronald, 3,801,277.
Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 3,801,901.
Hogg, Walter R.; and Coulter, Wallace H., 3,801,904.
Coulter, Wallace H.: *See—*
Hogg, Walter R.; and Coulter, Wallace H., 3,801,904.
Courtright, Burr, to CH_2, Inc. Conduit grip. 3,800,370, Cl. 24-260.000.
Coury, William J.: *See—*
Mogel, Ralph E.; and Coury, William J., 3,800,974.
Covington, Robert Allen, Jr.: *See—*
Andlick, Colin; and Covington, Robert Allen, Jr., 3,801,286.
Cowden, Herbert B.: *See—*
Rasch, Arthur A.; and Cowden, Herbert B., 3,801,325.
Coyle, Charles Ray. Liver-well aerator. 3,800,462, Cl. 43-57.000.
Cranig, Hubert. Safety-belt. 3,801,156, Cl. 297-386.000.
Cross, Edward A.; and Bright, Gordon S., to Texaco Inc. Water-resistant greases. 3,801,506, Cl. 252-40.000.
Culver, Mark N.: *See—*
Grabiel, John L. W.; Culver, Mark N.; and Lorenz, Edwin Albert, 3,801,973.
Cunha, Joseph J., to Cunha Products, Inc. Lubricant drip preventer for a fifth wheel. 3,801,136, Cl. 280-433.000.
Cunha Products, Inc.: *See—*
Cunha, Joseph J., 3,801,136.
Cunningham, Andrew J.: *See—*
Saas, Hosny Y.; Tuffile, Fred M.; Cunningham, Andrew J.; and Franco, Philip, 3,800,809.
Curcio, Joseph; Hufstetler, Perry P.; and Johnson, Roger W., to General Motors Corporation. In-ding repair tool. 3,801,772, Cl. 219-98.000.
Curtiss-Wright Corporation: *See—*
Berkowitz, Murray; and Davis, Robert C., 3,800,868.
Cutler, Earl F., to Cutler Repaving Associates, Incorporated. Heater for asphalt concrete roadways and the like. 3,801,212, Cl. 404-95.000.
Cutler, Gene C.: *See—*
Knox, George P.; and Cutler, Gene C., 3,801,663.
Cutler Repaving Associates, Incorporated: *See—*
Cutler, Earl F., 3,801,212.
Czaplinski, Thomas V.: *See—*
Hulit, Harry J.; and Czaplinski, Thomas V., 3,801,818.
Daguet, Jacques Lucien; and Bellanger, Maurice Georges, to Telecommunications Radioelectriques et Telepkoniques T.R.T. Numerical filter and digital data transmission system including said filter. 3,801,913, Cl. 325-38.00r.
Dahlberg, Jan Anders; and Christiansen, Virve Oivikki, to Uddeholms Aktiebolag. Method of removing corrosion-promoting substances from chlorinated hydrocarbons. 3,801,659, Cl. 260-654.00s.
Dahlberg, John R.: *See—*
Grove, Robert H.; De Torre, Robert P.; and Dahlberg, John R., 3,800,991.
Dahlgren, Sven-Eric, to Boliden Aktiebolag. Method for controlling the level of the pressure in the low pressure phase of an oscillating pressure impregnating process. 3,801,360, Cl. 117-116.000.
Daicel Ltd.: *See—*
Kubo, Masayoshi; and Horikawa, Takeshi, 3,801,584.
Daikin Kogyo Co., Ltd.: *See—*
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.
Daimler-Benz AG: *See—*
Barenyi, Bela, 3,800,620.
Daimler-Benz Aktiengesellschaft: *See—*
Barenyi, Bela, 3,800,604.
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,800,526.
Zelenka, Hermann, 3,800,904.
Daimoto, Tokinori: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.
Dain, Stephen John: *See—*
Hunt, Robert William Gainer; and Dain, Stephen John, 3,801,188.
Dalman, David Alan, to Dow Chemical Company, The. Chlorination of lower aliphatic aldehydes. 3,801,645, Cl. 260-601.00h.
Dame, John S., to Motorola, Inc. Voltage level shifting circuit. 3,801,831, Cl. 307-251.000.
Dana, Eugene. Coin operated card vending machine. 3,800,932, Cl. 194-10.000.
Danton, Jacques J.; Janex, Albert A.; and Martin-Garin, Gerard G., to International Standard Electric Corporation. Secondary radar system for time-shared target identification. 3,801,980, Cl. 343-6.51c.
Daoust, Gilles P. Adjustable loom for hand weaving. 3,800,372, Cl. 28-15.000.
Darling, Richard H.: *See—*
Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., 3,801,408.

Darrell, George H. Target throwing arm with target detent mechanism. 3,800,775, Cl. 124-43.000.

Dauksys, Richard J., to United States of America, Air Force. High modulus graphite fibers having improved bonding properties. 3,801,350, Cl. 117-47.00r.

Dauksys, Richard J., to United States of America, Air Force. Treatment of high modulus graphite fibers to improve their bonding characteristics. 3,801,351, Cl. 117-47.00r.

Davanzo, Vito. Portable collapsible combination crib and playpen. 3,800,341, Cl. 5-99.00r.

Davenport, Raymond A., to Oktronics, Inc. Four phase stepping motor control. 3,801,891, Cl. 318-696.000.

David, Michel, to Logabox. Apparatus for automatic half-tone (direct-screen) or continuous tone colour separation work in photomechanical reproduction. 3,801,198, Cl. 355-32.000.

Davies, Arthur S.: *See*—
Good, William E.; and Davies, Arthur S., 3,800,997.

Davies, Terence J., to Xerox Corporation. Electrophoretic imaging. 3,801,195, Cl. 355-3.000.

Davis, Claude A.: *See*—
Stendig, Joseph L.; and Davis, Claude A., 3,801,971.

Davis, Kent L.: *See*—
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Davis, Robert C.: *See*—
Berkowitz, Murray; and Davis, Robert C., 3,800,868.

Davis, Steven S.: *See*—
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Dawans, Francois; and Goldenberg, Emmanuel, to Institut Francais du Petrole des Carburants et Lubrifiants. Graft copolymers based on amorphous 1,2-polybutadiene. 3,801,674, Cl. 260-879.000.

Dayco Corporation: *See*—
Rogers, Jerry W., 3,800,611.

Dayton Steel Foundry Company, The: *See*—
Rike, Russell E., 3,800,923.

Dayton-Walter Corporation, The: *See*—
Afanador, Carlos P.; and Jones, Richard L., 3,801,124.

De Benneville, Peter L., to Rohm & Haas Company. N-acylated peptides of amino aromatic acids and their derivatives. 3,801,562, Cl. 260-112.500.

de Graff, David, to de Graff, Joan L. Protective enclosure for plants. 3,800,468, Cl. 47-28.000.

de Graff, Joan L.: *See*—
de Graff, David, 3,800,468.

de Rooij, Abraham H.: *See*—
Elmendorp, Jan; and de Rooij, Abraham H., 3,801,566.

De Torre, Robert P.: *See*—
Grove, Robert H.; De Torre, Robert P.; and Dahlberg, John R., 3,800,991.

Dean, David B.: *See*—
Eddleman, William L., 3,801,481.

Debenedetti, Guglielmo, to Insit S.p.A. Method of forming gaskets. 3,801,406, Cl. 156-306.000.

Debus, Henri Robert: *See*—
Aga, Rene Leon; and Debus, Henri Robert, 3,801,629.

Decker, Hanns; Jakobs, Willy; and Stockmann, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Gyratory crusher with hydraulic adjustment and hydro-pneumatic overload safety device. 3,801,026, Cl. 241-215.000.

Decker, Herbert, to Triumph Werke Nuernberg, A.G. Mounting means for single element type carrier. 3,800,934, Cl. 197-52.000.

DeCoster, Maureen H.: *See*—
DeCoster, Richard L.; and DeCoster, Maureen H., 3,801,150.

DeCoster, Richard L.; and DeCoster, Maureen H. Camper-compact bus combination structure and method of assembling same. 3,801,150, Cl. 296-23.00r.

Deering Milliken Research Corporation: *See*—
Johnson, Harold L., 3,800,718.

Dees, Donald E. Multi-hitch element tow hitch construction. 3,801,134, Cl. 280-415.00a.

DeGood, Maynard J.; and Champion, Wendell G. Rapistan Incorporated Trolley drive for over and under conveyor. 3,800,709, Cl. 104-172.00s.

Deica, Nicolae: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Del Monte Corporation: *See*—
Lent, Ralph C., 3,800,693.

Delahunty, Terry Wayne, to Chicago Bridge & Iron Company. System for reliquefying boil-off vapor from liquefied gas. 3,800,550, Cl. 62-54.000.

Delatorre, Leroy C.; Rapson, William J., Jr.; and Lemson, Paul H., to Uson Corporation. Leak testing apparatus. 3,800,586, Cl. 73-49.200.

Dell'Aquila, Joseph L., to Wendros Company. Omnidirectional aircraft. 3,801,047, Cl. 244-19.000.

Delorenzo, Joseph D.: *See*—
Ross, Gerald F.; Delorenzo, Joseph D.; and Lamensdorf, David, 3,801,976.

Dempster, Thomas B.: *See*—
Hurley, William J.; and Dempster, Thomas B., 3,801,000.

Denis, Andre Hector, to Matairco S.A. Control systems for operating jack units. 3,800,537, Cl. 60-477.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakagawa, Koji, 3,801,345.
Ogura, Hirukatsu; Takizawa, Tatsuo; Ono, Yoshizo; and Taketsume, Yukuo, 3,801,339.

Denney, Ernest James; and Stokes, Richard William, to Cambridge Scientific Instruments Limited. Analysis of data. 3,801,806, Cl. 235-183.000.

Denney, Jerry W., to American Monitor Corporation. Uric acid assay and reagents therefor. 3,801,466, Cl. 195-103.50r.

Denton, Douglas Graham; and MacKay, John Meldrum, to Ford Motor Company. Thermostatically controlled valve assembly. 3,801,078, Cl. 236-93.000.

Dernovshek, Joseph F.: *See*—
Cook, Albert W.; and Dernovshek, Joseph F., 3,800,392.

Deschepper, Pierre: *See*—
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,800,983.

Detrick, Harry Rodney; and Harshbarger, Roland N., to GTE Sylvania Incorporated. Photoprinting article. 3,801,410, Cl. 161-1.000.

Deutsche Acheson GmbH: *See*—
Renkl, Hans-Dieter, 3,801,299.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Westlinning, Hermann; Wolff, Siegfried; and Schwarze, Werner, 3,801,537.

Devellian, Richard D.: *See*—
Grout, Kenneth M.; and Devellian, Richard D., 3,800,985.

Dewey, Frank C., Jr. Salt casting mixtures. 3,801,334, Cl. 106-38.300.

Dews, George H.; and Vine, Raymond W., to United Aircraft Corporation. Graphite and vinylidene fluoride structures for fuel cells. 3,801,374, Cl. 136-120.0fc.

Dexter, Martin; Spivack, John D.; and Steinberg, David H., to Ciba-Geigy Corporation. Dialkylhydroxyphenylalkanoic acid esters of di- and tri-pentaerythritol useful as polymer antioadants. 3,801,540, Cl. 260-45.85b.

Diamond Shamrock Corporation: *See*—
Stallings, John P.; Schrag, Gerald S.; and Semancik, John R., 3,801,693.

Dian, Russell. Manual rhythm light instrument. 3,801,186, Cl. 350-285.000.

Dicola, Vincent C.: *See*—
Kemmerer, Wayne J.; Dicola, Vincent C.; and Raddatz, Gene R., 3,801,951.

Diehl, Raymond A.: *See*—
Corkery, Gregory O'C.; and Diehl, Raymond A., 3,801,405.

Diehl, Robert B. Mechanical and electrical control system for a door panic control device. 3,801,144, Cl. 292-92.000.

Diehl, Robert Eugene; Schrider, Michael Stanley; and Kantor, Sidney, to American Cyanamid Company. Dioxocyclohexanecarboxanilide insecticides and acaricides. 3,801,630, Cl. 260-551.00s.

Dietz, Earl D., to Owens-Illinois, Inc. Tooth filling and facing compositions comprising a radiopaque glass and method of making the same. 3,801,344, Cl. 106-300.000.

Dietz, Kurt, to Siemens Aktiengesellschaft. X-ray tube. 3,801,847, Cl. 313-60.000.

Dionne, Robert A., to Evans, W. P., & Son Limited. Sleeved, bowed roll lubrication. 3,801,170, Cl. 308-107.000.

Distler, Josef, to Revroth, G. L., GmbH. Control valve arrangement for a hydraulic drive. 3,800,669, Cl. 91-411.00r.

Dittrich, Volker: *See*—
Duerr, Dieter; and Dittrich, Volker, 3,801,635.

Dobson, George. Latch for tape cassette reels. 3,801,042, Cl. 242-199.000.

Dobson Park Industries Limited: *See*—
Phillips, Reginald Andrew, 3,800,664.

Docimo, Peter J., to Marvin Electric Manufacturing Company. Downlight with multiplier cone. 3,801,815, Cl. 240-73.0bc.

Dockhorn, Walter: *See*—
Roll, Harry; Wergau, Jorg; and Dockhorn, Walter, 3,801,560.

Domann, Helmut: *See*—
Klaiber, Erich; Stockle, Hans; and Domann, Helmut, 3,800,755.

Domenico, Penelope B., to Dow Chemical Company, The. Halopyridine sulfonic acids. 3,801,582, Cl. 260-294.80r.

Dominion Auto Accessories Limited: *See*—
Smith, John, 3,801,810.

Dominion Engineering Works, Limited: *See*—
Malashenko, Alexander; Tidbury, Gordon Thomas; and Futcher, Ralph James, 3,801,435.

Dominon Bridge Company Limited: *See*—
Taylor, James Clifford, 3,800,721.

Donath, Hans; Beier, Hans-Peter; Otto, Gottfried; Mutz, Werner; and Tausch, Winfried, to Ministerium fur Verkehrswesen. Door lock for trucks, transcontainers and the like. 3,801,146, Cl. 292-218.000.

Donnelly, James F.: *See*—
Miles, Michael E.; and Donnelly, James F., 3,801,066.

Donohue, Paul C., to Du Pont de Nemours, E. I., and Company. Semiconducting europium- and/or ytterbium-containing sulfides and selenides of pseudo-orthorhombic crystal structure. 3,801,702, Cl. 423-263.000.

Dorion, George Henry, to American Cyanamid Company. Method of selectively generating fluorescence and its subsequent detection. 3,801,782, Cl. 250-271.000.

Dorn, Edward G. Bookrack. 3,800,958, Cl. 211-43.000.

Dornan, Arthur E., to Massey-Ferguson Inc. Selector lock. 3,800,617, Cl. 74r475.000.

Dorrell, Robert F., to Bunker Ramo Corporation. Coupled electrical connector with heat-activated memory locking means. 3,801,954, Cl. 339-90.00r.

Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; and Slavik, Vlastislav, to Vyzkumny ustav bavlnarsky. Ringless spinning machine. 3,800,521, Cl. 57-58.950.

Douglas, Bobby L., to Dresser Industries, Inc. Thermoplastic pump plunger having spiral threads and method of making same. 3,800,385, Cl. 29-156.40r.

Douglas, Bobby L., to Dresser Industries, Inc. Pump plunger having alternate right and left hand spiral threads. 3,801,235, Cl. 417-554.000.

Douve Egberts Koninkijki Tabaksfabrick Koffiebranderijen-Theehauld N.V.: *See*—
Molenaar, Albert Meijlom; and Veenstra, Melle, 3,800,690.

Dover Corporation: *See*—
McPherson, Alexander W.; and Sendoykas, Jack J., 3,801,091.

Dow Chemical Company, The: *See*—
Arnold, John L., 3,801,699.
Bidlack, Harvey D.; and Mussell, Dorsey R., 3,801,301.
Bohme, Reinhard D., 3,801,551.
Brodof, Terry A., 3,801,519.
Dalman, David Alan, 3,801,645.
Domenico, Penelope B., 3,801,582.
Hart, Peter J.; and Friedli, Hans R., 3,801,661.
Moore, Eugene R.; Smith, Linton E., III; and Pickelman, Dale M., 3,801,549.
Nickner, Richard A., 3,801,676.
Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Turner, Alfrey, Jr., 3,801,429.

Dow Corning Corporation: *See*—
Harper, Jack R., 3,801,430.
Mink, Alan E.; and Mitchell, Darrell D., 3,801,544.

Dowicki, William J.: *See*—
Arn, Fred A.; Dowicki, William J.; and Pierce, Howard E., 3,801,062.

Dowling, Thomas Barrow. Means for attaching staysails to stays. 3,800,728, Cl. 114-105.000.

Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. N-benzyltriazole compounds and plant growth regulant compositions. 3,801,590, Cl. 260-307.00h.

Draper, Homer L.; and Gagle, Duane W., to Phillips Petroleum Company. Compositions for sealing pavement. 3,801,341, Cl. 106-281.000.

Dray, Walter L.: *See*—
Sollami, Blase J.; Bulat, Thomas J.; and Dray, Walter L., 3,800,552.

Drebes, Friedrich: *See*—
Schoen, Erich; Drebes, Friedrich; and Birresborn, Gunter, 3,801,473.

Dresser Industries, Inc.: *See*—
Douglas, Bobby L., 3,800,385.
Douglas, Bobby L., 3,801,235.

Drevet, George, to Manufacture Francaise d'Aimes & Cycles de Saint-Etienne. Double acting triggering mechanism for a double barreled sporting gun. 3,800,455, Cl. 42-42.00r.

Drew, Louis Edward: *See*—
Buzzard, Clair Alan; and Drew, Louis Edward, 3,801,740.

Drexler, Leonard H.: *See*—
Berejka, Anthony J.; and Drexler, Leonard H., 3,801,531.

Driscu, Gheorghe: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Driver, Wilbur B., Company: *See*—
Steinitz, Robert, 3,801,312.

Droin, Melvin L.; Loft, John T.; and Plovan, Steven G., to Celanese Corporation. Novel open-celled microporous film. 3,801,404, Cl. 156-229.000.

Drouin, Andre H.: *See*—
Herd, David P.; Fowler, John H.; Drouin, Andre H.; and Bush, Robert E., 3,800,869.

Droz, Francois, to Gertsch AG, mesne. Releasable ski binding. 3,801,118, Cl. 280-11.35t.

Du Pont de Nemours, E. I., and Company: *See*—
Adelman, Robert Leonard, 3,801,550.
Andlick, Colin; and Covington, Robert Allen, Jr., 3,801,286.
Bither, Tom Allen, Jr., 3,801,703.
Conwicke, Joel Alfred, 3,801,337.
Cope, Andrew Passmore; and Cope, Steven Andrew, 3,801,401.
Donohue, Paul C., 3,801,702.
Hofmann, George Henry, 3,801,541.
Holschele, Guenther Kurt, 3,801,547.
Irwin, Carl Francis; and Wolfe, Harry Walter, Jr., 3,801,518.
Jackson, Julius, 3,801,591.
Middleton, William J., 3,801,650.
Morgan, Paul Winthrop, 3,801,528.
Parker, Fred Walter, 3,801,524.
Porter, Harold Felton; Rennie, Foster Wilson; and Williamson, Addison Heaton, 3,801,370.
Pye, Donald George, 3,801,510.
Rist, George A., 3,801,354.
Rose, Elva Lincoln, 3,800,371.
Solenberger, John Carl, 3,801,512.
Vasta, Joseph A., 3,801,522.
Webster, Owen Wright, 3,801,585.
Yates, Paul C., 3,801,527.

Dubois, Ernest Marie Rene: *See*—
Mourlon, Jean-Claude; and Dubois, Ernest Marie Rene, 3,800,951.

Duerksen, Arnold, to Cochran Western Corporation. Power shaft coupling. 3,800,556, Cl. 64-6.000.

Duerr, Dieter; and Dittrich, Volker, to Ciba-Geigy AG. N-(2-methyl-4-chlorophenyl)-n',N'-dimethyl-thiourea. 3,801,635, Cl. 260-552.00r.

Duikers, Marcel; and Minsart, Maurice, to Solvay & Cie. Apparatus for deflashing hollow bodies of plastic material. 3,800,638, Cl. 82-101.000.

Duisburger Kupferhutte: *See*—
Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.

Dulama,Dan: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Dumazet, Eugene, to Ethylene-Plastique. Gland packings. 3,801,112, Cl. 277-124.000.

Dumeah, Peter J., to TRW Inc. Method of adapting manual rock and pinion steering gear to accommodate a power mode of operation. 3,800,407, Cl. 29-418.000.

Dumit, Joseph P.: *See*—
Brody, Samuel, 3,801,056.

Duncanson, William T.; and Kennedy, James C., Jr., to Caterpillar Tractor Company. Nois-suppressing control level for vibration prone mechanisms. 3,800,909, Cl. 181-33.00a.

Dunkin, Albert, to Raybestos-Manhattan, Inc. Method and apparatus for cutting and inserting blanks from a rod. 3,800,348, Cl. 10-11.00t.

Duroux, Jean; and Zahaczewski, Michel, to Compagnie d'Applications et de Diffusion de Techniques Nouvelles. Method for determining the electrical resistivity of the subsoil by electromagnetic surface waves and apparatus for subsoil prospecting by measuringelectromagnetic fields. 3,801,896, Cl. 324-6.000.

Durrell, William S.; and Eckert, Robert J., Jr. Processes for the preparation of chloroiminophosgene. 3,801,483, Cl. 204-157.10r.

Duschatko, Robert W.: *See*—
Thompson, Robert R.; Duschatko, Robert W.; and Nash, Arthur J., 3,801,281.

Dutta, Dipak; and Wurker, Karl-Gerd, to Mannesmannrohren-Werke Aktiengesellschaft. Offshore terminal with underwater foundation. 3,800,547, Cl. 61-46.000.

Dutz, Hubert: *See*—
Mulfinger, Hans-Otto; Dutz, Hubert; and Krolla, Hans-Georg, 3,801,356.

Duval, Leonard A. Apparatus for dredging divided solids submerged in liquid. 3,800,949, Cl. 210-171.000.

Dyment, John Cameron; Logan, Ralph Andre; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Method for selectively etching $Al_xGa_{1-x}As$ multilayer structures. 3,801,391, Cl. 156-16.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Gawlick, Heinz; Schatz, Arthur; and Mothes, Heinz, 3,800,706.

Dynapac, Inc.: *See*—
Biggs, Eugene S., 3,800,382.

E-Systems, Incorporated: *See*—
Gershberg, David N.; and Lee, Alex Y., 3,801,978.

Eames, John P.: *See*—
Lowrance, Edgar G.; and Eames, John P., 3,801,698.

Eastman Kodak Company: *See*—
Evans, Francis J.; and McLaen, Donald F., 3,801,321.
Rasch, Arthur A.; and Cowden, Herbert B., 3,801,325.

Eastwood, H. Keith; Johannes, Robert; Griffiths, Clifford H.; and Gavini, Anibal, to Multi-State Devices Ltd. Computer memory device. 3,801,824, Cl. 250-211.000.

Easwaran, Jairaj: *See*—
Kutler, Gerald; and Easwaran, Jairaj, 3,801,303.

Eaton Corporation: *See*—
Krohn, Henry W., 3,800,736.
Larson, Bernard J., 3,801,239.
Pease, Logan L.; and Huggins, Robert W., Jr., 3,801,837.
Ward, Harold R.; and Hicks, Dewin D., 3,800,535.

Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr., to Proctor-Silex Incorporated. Toaster-oven. 3,800,691, Cl. 99-391.000.

Eberhardt, H. Alfred. Centrifugal pump assembly. 3,801,224, Cl. 417-62.000.

Eberstein, Ralph: *See*—
Karlen, Harvey R.; Eberstein, Ralph; and Herbsthofer, Franz L., 3,800,988.

Ebert, Jurgen: *See*—
Nusser, Hermann; Van Elden, Hendricus; and Ebert, Jurgen, 3,801,231.

Ebner, Peter. Recrystallizing annealing process for treating semifinished brass stock. 3,801,380, Cl. 148-13.200.

Eckert, Robert J., Jr.: *See*—
Durrell, William S.; and Eckert, Robert J., Jr., 3,801,483.

Ecodyne Corporation: *See*—
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,801,076.
Weis, Frank G., 3,801,075.

Eddleman, William L., 1/3 to Dean, David B. and 1/3 to Hayden, Douglas B., Jr. Method for purifying the liquor of a galvanizing process plant after contamination. 3,801,481, Cl. 204-149.000.

Edenborough, Barry William: *See*—
Robins, Robert George; and Edenborough, Barry William, 3,801,701.

Edgar, Robert F.: *See*—
Corman, James C.; Edgar, Robert F.; McLaughlin, Michael H.; and Tompkins, Russell E., 3,801,843.

Edgecumbe, John, to Varian Associates. Variable magnification image tube. 3,801,849, Cl. 313-102.000.

Edgerton, Philip; and Lodholz, John, to FMC Corporation. Sludge removal mechanism. 3,800,955, Cl. 210-528.000.

Edgington, Donald C.; and Edgington, William E. Graphic arts film dryer. 3,800,434, Cl. 34-155.000.

Edgington, William E.: *See*—
Edgington, Donald C.; and Edgington, William E., 3,800,434.

Edwards, Bryant, to Illinois Tool Works Inc. Disposable nurser. 3,800,843, Cl. 150-.500.

Edwards, Joseph R., Sr.; and Kloth, James Albert, to AMP Incorporated. Electrical connection having radial crimp and axial indentation. 3,800,584, Cl. 72-410.000.

Edwards, Richard C., to Mosler Safe Company, The. Night depository line security. 3,801,960, Cl. 340-151.00r.

Egerton, McKenny W., Jr., to Instrument Corporation of America. Electronic stencil cutter with cutting signal pulse width inversely proportional to the original intensity. 3,801,738, Cl. 178-6.60b.

Eggenschwyler, Eduard A., to Pulfer AG. Process and device for the survey alignment with a laser beam. 3,801,205, Cl. 356-138.000.

Eggleston, James F., to Tenneco Oil Company. Method for dislodging a pipe string. 3,800,876, Cl. 166-301.000.

Egnaczak, Raymond K., to Xerox Corporation. Materials application apparatus. 3,800,743, Cl. 118-259.000.

Eichelberger, Charles W.; and Burke, Hubert K., to General Electric Company. Method and apparatus for sensing radiation and providing electrical readout. 3,801,820, Cl. 250-211.00j.

Eickmann, Karl. Fluid borne craft driven by hydrostatically operated propellers governed by an accident preventing automatic control device. 3,801,046, Cl. 244-17.230.

Eiland, Phillip F.: *See*—
Worth, Daniel L.; and Eiland, Phillip F., 3,800,565.

Eildes, Robert Anthony; Potts, James Rowland; and Farthing, John Eaton, to Glaxo Laboratories Limited. Process for preparing cephalosporin derivatives. 3,801,458, Cl. 195-29.000.

Einarsson, John R.: *See*—
Fylling, Donald R.; Einarsson, John R.; and Youmans, Donald W., 3,801,177.

Einwiller, Andreas: *See*—
Baumann, Hans; Einwiller, Andreas; and Hansen, Guenter, 3,801,596.

Eisenberg, Harvey. Apparatus for making a foamed article having a plastic skin bonded thereto. 3,801,244, Cl. 425-102.000.

Eisenwerk-Gesellschaft Maximilianshutte m.b.H.: *See*—
Nilles, Paul Emile; and Piret, Jacques, 3,801,305.

Eisenwerke Gesellschaft, Maximilianshutte m.b.H.: *See*—
Mantey, Paul Gerhard; and Knorr, Eberhard, 3,801,083.

Elam, Michael R.: *See*—
Blair, G. Richard; and Elam, Michael R., 3,801,367.

Elast-O-Cor Products & Engineering Limited: *See*—
Reid, Charles M.; and Ronellenfitch, Bernard M., 3,800,946.

Electro-Clamp Corporation: *See*—
Lawlop, Robert E., 3,801,952.

Eliasson, Eva. Swimming pool device and method of making such device. 3,800,487, Cl. 52-169.000.

Elin-Union A.G. fur elektrische Industrie: *See*—
Ettenreich, Ludwig, 3,801,382.

Elliott, Angelika: *See*—
Elliott, John, 3,800,780.

Elliott, John, to Elliott, Angelika. Vacuum indicator. 3,800,780, Cl. 128-2.00f.

Ellis, Greer, to Vishay Intertechnology, Inc. Brittle coating compositions. 3,801,340, Cl. 106-238.000.

Elmendorp, Jan; and de Rooij, Abraham H., to Stamicarbon N.V. Removal of lactams from a medium which contains concentrated sulphuric acid or sulphur trioxide. 3,801,566, Cl. 260-239.30a.

Elmore, Donald F.: *See*—
Kist, Karl E.; and Elmore, Donald F., 3,800,698.

Elmore, Lester C.: *See*—
Broxholm, Thomas M.; and Elmore, Lester C., 3,800,657.

Elsel, Werner, to Siemens Aktiengesellschaft. Electric magnet with superconductive windings. 3,801,942, Cl. 335-216.000.

Elsner, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for comminuting tobacco. 3,801,024, Cl. 214-34.000.

Emerson Electric Co.: *See*—
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,800,823.

Emmert, Reinhold, to Grundig E.M.V. Electro-Mechanische Versuchsanstalt. Tape apparatus for use with tape cassettes. 3,801,039, Cl. 242-191.000.

Encel, Wolfhard: *See*—
Seeger, Ernst; Kahling, Joachim; and Encel, Wolfhard, 3,801,592.

Endo, Meitaro: *See*—
Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, 3,801,368.

Energy Conversion Devices, Inc.: *See*—
Hrzek, Bohuslav A., 3,801,365.

Engalitcheff, John, Jr., to Baltimore Aircoil Company, Inc. Injector type indirect evaporative condensers. 3,800,553, Cl. 62-310.000.

Engel, Wolfhard: *See*—
Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Engelhardt, Gunther, 3,801,654.

Engelbach, Heinz: *See*—
Krabetz, Richard; Willersinn, Carl-Heinz; Engelbach, Heinz; Wistuba, Hermann; Lebert, Ulrich; and Frey, Walter, 3,801,634.

Engelhardt, Gunther: *See*—
Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Engelhardt, Gunther, 3,801,654.

English Calico Limited: *See*—
Stankard, Donald Rider; and Wilson, Thomas William, 3,801,275.

English, Christopher Durrant; Fuller, Brian Robert; Bone, Geoffrey Edward; Bishop, Peter Douglas; and Birchnall, Eric James, to Tracked Hovercraft Limited. Tracked vehicle and suspension system. 3,800,708, Cl. 104-148.01m.

English Clays Lovering Pochin and Company Limited: *See*—
Windle, William, 3,801,433.

English Electric Valve Company Limited: *See*—
Broadhead, John Arthur, 3,801,859.

Entreprise de Recherches et d'Activites Petrolieres-Elf: *See*—
Mourlon, Jean-Claude; and Dubois, Ernest Marie Rene, 3,800,951.

Environmental Research Corporation: *See*—
Grangaard, Orrin H.; and Peake, Ernest R., 3,801,858.

Envirotech Corporation: *See*—
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Erb, George H., to American Velcro, Inc. Apparatus for the manufacture of a separable fastener. 3,801,245, Cl. 425-174.400.

Erickson, Floyd B., to Monsanto Company. Photoimaging in presence of oxygen. 3,801,320, Cl. 96-48.00r.

Erickson Tool Company: *See*—
Benjamin, Milton L., 3,801,115.

Ershova, Vera Alexandrovna: *See*—
Tolstoguzov, Vladimir Borisovich; Mzhelsky, Alexandr Ivanovich; Ershova, Vera Alexandrovna; Braudo, Evgeny Evgenievich; and Mikheeva, Natalia Vasilievna, 3,801,713.

Esposio, Victor, to Frost Enterprises, Inc. Hair treating apparatus. 3,800,811, Cl. 132-9.000.

Essenhigh, Robert H., to Scientific Research Instruments, Corporation. Method for effecting chemical reactions between cascading solids and counterflowing gases or fluids. 3,801,469, Cl. 201-17.000.

Esso Production Research Company: *See*—
Love, William W.; Lock, Everett H.; Maurer, William C.; and Heilhecker, Joe K., 3,801,234.

Esso Research and Engineering Company: *See*—
Beers, Ronald W., 3,801,534.
Berejka, Anthony J.; and Drexler, Leonard H., 3,801,531.

Estes, David A., to Scott Land Levelers, Inc. Telescoping landleveler. 3,800,884, Cl. 172-780.000.

Etablissements Carpano & Pons S.A.: *See*—
Mimeur, Robert, 3,801,121.

Ethyl Corporation: *See*—
Meltsner, Bernard R., 3,801,543.
Worrel, Calvin J., 3,801,642.

Ethylene-Plastique: *See*—
Dumazet, Eugene, 3,801,112.

Ettenreich, Ludwig, to Elin-Union A.G. fur elektrische Industrie. Method of precipitation hardening of copper-aluminum alloys. 3,801,382, Cl. 148-159.000.

Etter, Berwyn E. Metering valve. 3,800,830, Cl. 137-625.410.

Eue, Ludwig: *See*—
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., 3,801,590.
Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,801,589.

Evans, Francis J.; and McLaen, Donald F., to Eastman Kodak Company. Photothermographic element, composition and process. 3,801,321, Cl. 96-48.0hd.

Evans, Leigh D.: *See*—
Bowen, Paul E.; and Evans, Leigh D., 3,800,994.

Evans, W. P., & Son Limited: *See*—
Dionne, Robert A., 3,801,170.

Eversole, William C., to Kennametal Inc. Adjustable dovetail boring bar. 3,801,213, Cl. 408-181.000.

Excel Industries, Inc.: *See*—
Hodgen, Loran M.; and Weimer, Gary L., 3,801,155.

Eygermans, Petrus Johannes, to Koninklijke Nederlandsche Gist-En Spiritus-Fabriek N.V. Preparation of enzymes in particulate form. 3,801,463, Cl. 195-68.000.

F. Kuppersbusch & Sohne Aktiengesellschaft: *See*—

Lohr, Alfred; Schwan, Wolfgang; and Tscheck, Wolfgang, 3,800,778.

Faede, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,801,570.

Faletti, Franco: *See—*
Petrini, Guido; Moreschini, Luciano; Marciandi, Franco; and Faletti, Franco, 3,801,621.

Fall, Herbert S.: *See—*
York, William D., 3,801,166.

Fallon, Herbert J., to Bendix Corporation, The. Rotary work carrier arrangement for a double disc grinder. 3,800,476, Cl. 51-118.000.

Fanelli, Anthony Joseph; Blank, Gerlinde Metzler; and Rauch, Francis Clyde, to American Cyanamid Company. Catalytic hydration of acrylonitrile to acrylamide. 3,801,639, Cl. 260-561.00n.

Farber, Gerald: *See—*
Steinberg, Meyer; and Farber, Gerald, 3,801,358.

Farber, Grigory Lvovich: *See—*
Yavorsky, Arsenty Vasilievich; Tkachuk, Rostislav Arsentievich; Ostapchuk, Jury Grigorievich; Farber, Grigory Lvovich; Bondar, Viktor Stepanovich; and Pryalochnikov, Gennady Vasilievich, 3,801,238.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Geiger, Rolf, 3,801,564.
Krieg, Martin, 3,801,480.
Lademann, Rudolf; Weisenberger, Karl; and Metzger, Adolf, 3,801,632.
Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,801,570.

Farinas, Pedro: *See—*
Zocholl, Stanley E.; and Farinas, Pedro, 3,801,872.

Farish, Owen, to Westinghouse Electric Corporation. Spacer construction for fluid-insulated transmission lines. 3,801,725, Cl. 174-28.000.

Farrell, Robert E., to Improved Machinery Inc. Breech mechanism including self-aligning breech blocks. 3,801,256, Cl. 425-450.000.

Farthing, John Eaton: *See—*
Eildes, Robert Anthony; Potts, James Rowland; and Farthing, John Eaton, 3,801,458.

Fassauer, Arthur L. Animal feeder. 3,800,745, Cl. 119-51.110.

Fassbender, Josef: *See—*
Barthels, Heinz; Fassbender, Josef; and Katscher, Werner, 3,801,450.

Fastener Engineers, Inc.: *See—*
Alcock, Richard A.; and Shosie, Wayne A., 3,800,645.

Faulkner, Harold, to Hunt Electronics Company. Motor speed control circuit. 3,801,888, Cl. 318-471.000.

Faust, Robert N.: *See—*
Warrick, Ronald W.; and Faust, Robert N., 3,800,399.

Fauver, J. N., Inc., mesne: *See—*
Montogomery, Clifford S., 3,800,935.

Fecken-Kirfel KG Maschinenfabrik: *See—*
Schroder, Josef, 3,800,650.

Fecker, Josef, to Texpatent GmbH (S.a.r.l.). Method and apparatus for closing the toe of stockings or stocking tights. 3,800,559, Cl. 66-9.00r.

Federal-Mogul Corporation: *See—*
Bentley, Gustavus A., 3,801,114.

Feldman, Irving. Packaging machine. 3,800,499, Cl. 53-168.000.

Feldman, Julian: *See—*
Frampton, Orville D.; and Feldman, Julian, 3,801,656.

Feliz, Jack M. Champagne cork extractor and wire cutter. 3,800,345, Cl. 7-14.100.

Fencl, George J.: *See—*
Block, Ramon M.; and Fencl, George J., 3,801,413.

Ferkl, Frantisek: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; and Slavik, Vlastislav, 3,800,521.

Fernandez, Frank J.: *See—*
Manning, David C.; and Fernandez, Frank J., 3,801,282.

Ferno-Washington, Inc.: *See—*
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Ferranti Limited: *See—*
Rymer, Harold Frank, 3,801,720.

Ferro Corporation: *See—*
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Finch, Stanley R. Ingition system for an internal combustion engine. 3,800,757, Cl. 123-117.00r.

Fink, Fred S.: *See—*
Josephson, Albert; and Fink, Fred S., 3,800,782.

Finn Industries, Inc., The: *See—*
Alexander, John D.; and Adams, Leonard, Jr., 3,801,394.

Finocchiaro, Harry S.: *See—*
Finocchiaro, Harry S.; and Tyo, James (said Tyo assor. to said), 3,800,959.

Finocchiaro, Harry S.; and Tyo, James, said Tyo assor. to said Finocchiaro, Harry S. Ladder holder. 3,800,959, Cl. 211-89.000.

Firestone, Raymond A.: *See—*
Reinhold, Donald F.; Sletzinger, Meyer; and Firestone, Raymond A., 3,801,601.

Firestone Tire & Rubber Company, The: *See—*
Johnson, Charles R., 3,801,555.
Smith, Walter J.; and Bukey, John R., 3,801,521.
Webb, Frederick J.; and Tate, David P., 3,801,500.

Firma Alb. Klein K-G: *See—*
Bastgen, Wendel, 3,800,952.

Fischer, Charles F., to Colgate Palmolive Company. Compression assembly for soap plodder. 3,801,248, Cl. 425-199.000.

Fischer, Earl L., to Victor Comptometer Corporation. Pneumatic gun with lost motion piston-piston rod connection. 3,800,773, Cl. 124-13.00a.

Fischer, Ernst, to Gebr. Bohler & Co. Aktiengesellschaft. Rock drill bit. 3,800,892, Cl. 175-410.000.

Fishkin, Richard: *See—*
Greenberg, Theodore H., 3,801,101.

Fleischaker, Richard J. Quick change sliding sinker. 3,800,459, Cl. 43-44.900.

Fleissner, Heinz, to Vepa AG. Device for crimping groups of synthetic filaments. 3,800,373, Cl. 28-1.600.

Flents Products Co., Inc.: *See—*
Visor, Frederick C., 3,800,791.

Fletcher, Kenneth L.; and Haward, Robert N., to Shell Oil Company. Olefin polymerization. 3,801,558, Cl. 260-88.20r.

Flick, Joseph J., 1/2 to Burns, Oliver W. Hand operated wire binder. 3,800,836, Cl. 140-93.200.

Flitner, David P.; La Haye, Paul G.; and Neugebauer, Franz J., to General Electric Company. Air cooled vapor condenser module. 3,800,861, Cl. 165-111.000.

FMC Corporation: *See—*
Edgerton, Philip; and Lodholz, John, 3,800,955.
Fylling, Donald R.; Einarsson, John R.; and Youmans, Donald W., 3,801,177.
Joseph, Robert T., 3,801,514.
Young, Sanford Tyler; and Wilson, Kenneth R., 3,801,625.

Folkenroth, Earl Ernest: *See—*
Brehm, Ronald Carl; Folkenroth, Earl Ernest; and Wagner, Earl William, 3,800,389.

Follett, John L., to Follett Valves Inc. Fuel line shut off. 3,800,816, Cl. 137-75.000.

Follett Valves Inc.: *See—*
Follett, John L., 3,800,816.

Foote, J. B., Foundry Co., The: *See—*
Hauser, Hans; and Jones, Ronald N., 3,800,603.

Ford Motor Comapny: *See—*
Sutherland, Gilbert J., 3,800,758.

Ford Motor Company: *See—*
Bishop, Gerald B., 3,800,756.
Boyer, Wesley D., 3,801,830.
Brittain, William J.; and Lindre, Jaan, 3,801,916.
Cedar, Raymond J., 3,800,759.
Denton, Douglas Graham; and MacKay, John Meldrum, 3,801,078.
Goodale, William B., 3,800,900.
Gropp, Karl H.; and Hausch, Raymond M., 3,800,817.
McCullough, Charles W., 3,800,762.
Morris, George R., 3,800,929.
Mullen, William P., 3,801,169.
Nikolits, Ronald F.; and Kane, Thomas J., 3,800,369.
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Formica Corporation: *See—*
Buonaura, Anthony, 3,800,335.

Formsprag Company: *See—*
Pray, Lawrence H., 3,800,928.

Forrest, Sanford I. Expandable garment waistband. 3,800,332, Cl. 2-237.000.

Fosroc A.G.: *See—*
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Fouquet-Werk Frauz & Planck: *See—*
Beuter, Hermann; and Planck, Alfred, Jr., 3,800,561.

Fowler, John H.: *See—*
Herd, David P.; Fowler, John H.; Drouin, Andre H.; and Bush, Robert E., 3,800,869.

Fowler, Leslie L., to Cata-Sep, Inc. Cell having catalytic action for coalescing oil droplets. 3,800,945, Cl. 210-73.000.

Frampton, Orville D.; and Feldman, Julian, to National Distillers and Chemical Corporation. Catalytic hydration of olefins. 3,801,656, Cl. 260-641.000.

Francke, Dilihard: *See—*
Pasedach, Heinrich; Bittler, Knut; Francke, Dilihard; and Hoffmann, Werner, 3,801,653.

Franco, Philip: *See—*
Saas, Hosny Y.; Tuffile, Fred M.; Cunningham, Andrew J.; and Franco, Philip, 3,800,809.

Francolino, Giuseppe. Electric toothbrush. 3,800,350, Cl. 15-23.000.

Franks, Douglas G. K.; and Sage, Ira H., to Production Technology, Inc. Twin-spindle inertia welding machine. 3,800,995, Cl. 228-2.000.

Franscioni, Michael Silvio: *See—*
Baggiolini, Primo; Muscio, James Edward; and Franscioni, Michael Silvio, 3,800,518.

Fratessa, Joseph B. Collapsible crypt flexible system. 3,801,060, Cl. 249-144.000.

Free, David, to Radiation Development Co., Ltd. Process of subjecting wood chips to irradiation with electrons. 3,801,432, Cl. 162-50.000.

Freed, William T., to Celanese Corporation. Stabilized polyalkylene resin composition and process for making same. 3,801,530, Cl. 260-32.60r.

Frey, Walter: *See—*
Krabetz, Richard; Willersinn, Carl-Heinz; Engelbach, Heinz; Wistuba, Hermann; Lebert, Ulrich; and Frey, Walter, 3,801,634.

Friberg, Karl Axel, to Aktiebolaget K.A. Friberg. Artificial leg. 3,800,333, Cl. 3-21.000.

Friberg, Karl Axel, to Aktiebolaget K.A. Friberg. Arrangement in feet for leg prostheses. 3,800,334, Cl. 3-23.000.

Frick, Roger L., to Rosemount Inc. Differntial pressure transducer. 3,800,413, Cl. 29-592.000.

Fried, John H.: *See—*
Pfister, Jorg R.; Harrison, Ian T.; and Fried, John H., 3,801,598.

Friedli, Hans R.: *See—*
Hart, Peter J.; and Friedli, Hans R., 3,801,661.

Friedman, Robert H., to Getty Oil Company. Methods and compositions for recovery of oil. 3,800,872, Cl. 166-270.000.

Friedr' Remy Nachfolger KG: *See—*
Gunia, Klaus, 3,800,491.

Fristot, Alfred Jean. Collapsible mounting of arms, rods or branches on a central support. 3,801,415, Cl. 161-24.000.

Fritsch, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,801,570.

Frost Enterprises, Inc.: *See—*
Esposio, Victor, 3,800,811.

Fruchte, Donald R., to General Motors Corporation. Vehicle seat. 3,800,343, Cl. 5-351.000.

Frushour, George Victor; and Nafziger, Marvin Lee, to Lilliston Corporation. Draft tongue and power take-off coupling for peanut combines. 3,800,517, Cl. 56-208.000.

Frymaster Corporation, The: *See—*
Moore, Lewis Frank; and Price, George McNair, 3,800,779.

Fuerst, Bernard: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,801,323.
Fujimura, Ikuo, 3,801,389.
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Fuji Shashin Film Kabushiki Kaisha: *See—*
Miyata, Tomiaki; Hamada, Shinji; Watanabe, Shigenobu; and Ogawa, Toshiko, 3,800,432.

Fuji Shoshin Koki Kabushiki Kaisha: *See—*
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Fujii, Hiroo: *See—*
Okuno, Ryuzo; and Fujii, Hiroo, 3,801,267.

Fujii, Hiroshi: *See—*
Yamamoto, Ichizo; and Fujii, Hiroshi, 3,800,982.

Fujikura Cable Works, Limited, The: *See—*
Kubo, Isao; and Shiseki, Nobuo, 3,801,723.

Fujimura, Ikuo, to Fuji Photo Film Co., Ltd. Photoelectrically converting optical fiber and method of making the like. 3,801,389, Cl. 156-6.000.

Fujino, Masahiko: *See—*
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.

Fujitsu Limited: *See—*
Andoh, Shizuo; Urade, Toshinori; and Hirose, Tadatsugu, 3,801,851.

Fukase, Shigeo: *See—*
Kawabe, Ushio; Kudo, Mitsuhiro; and Fukase, Shigeo, 3,801,313.

Fukuba, Hiroshi. Handle device for operating carpet sweeper. 3,800,351, Cl. 15-41.00r.

Fukuda, Hideo: *See—*
Suzuki, Takashi; Sumino, Yasuhiro; Akiyama, Shunichi; and Fukuda, Hideo, 3,801,455.

Fukugami, Goro; Tamura, Chiaki; Majima, Hideji; and Takahashi, Hideo. Automatic vertical band sawing machine provided with mechanism to attenuate the resonance between the sawing blade and the work table. 3,801,089, Cl. 83-74.000.

Fukushima, Takashi: *See—*
Komura, Yasuyuki; Hirata, Shinichi; Fukushima, Takashi; and Ogawa, Mutsuo, 3,801,737.

Fulghum, David A., to International Harvester Company. Belt drive apparatus. 3,800,612, Cl. 74-242.15r.

Fuller, Brian Robert: *See—*
English, Christopher Durrant; Fuller, Brian Robert; Bone, Geoffrey Edward; Bishop, Peter Douglas; and Birchnall, Eric James, 3,800,708.

Fuller, Francis W.; and Kiwalle, Jozef, to Production Technology, Inc. Apparatus for flash removal. 3,800,996, Cl. 228-2.000.

Fulmer, Keith H. Brake proportioning valve with controlled blend back. 3,801,159, Cl. 303-6.00c.

Funakubo, Toshiei, to Kabushiki Kaisha Eishin. Method of manufacturing bimetallic high-speed cutting tools. 3,800,633, Cl. 76-112.000.

Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, to Ecodyne Corporation. Concrete cooling tower. 3,801,076, Cl. 261-111.000.

Furnicescu, Nicolae: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Furukawa Electric Co., Ltd., The: *See—*
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.

Furukawa, Yasuyoshi: *See—*
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Furuuchi, Shigemasa; Nishihara, Akira; Okajima, Yasunaru; and Kamimori, Tadatoshi, to Asahi Glass Company Limited. Process for preparing hard coated film having scratch resistance. 3,801,352, Cl. 117-62.000.

Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, to Toray Industries, Inc. Process of electroless plating and article made thereby. 3,801,368, Cl. 117-239.000.

Futcher, Ralph James: *See—*
Malashenko, Alexander; Tidbury, Gordon Thomas; and Futcher, Ralph James, 3,801,435.

Fuzzell, Joe E.: *See—*
Coleman, Donald F.; and Fuzzell, Joe E., 3,800,671.

Fylling, Donald R.; Einarsson, John R.; and Youmans, Donald W., to FMC Corporation. Frameless shipping container. 3,801,177, Cl. 312-351.000.

Gabriel, Ralph Parton, to Communications Patents Limited. Wired broadcasting systems. 3,801,735, Cl. 178-5.100.

GAF Corporation: *See—*
Cerwonka, Edward J., 3,801,638.
Szymber, Oleg, 3,801,753.

Gagle, Duane W.: *See—*
Draper, Homer L.; and Gagle, Duane W., 3,801,341.

Gaillard, Robert Maurice Georges, to L'Electronique Medicale S.E.R.D.A.L.S.A. Heart stimulation apparatus and method of testing its installation. 3,800,801, Cl. 128-419.00p.

Gal, Gyula: *See—*
Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszio, 3,801,578.

Galbraith, Lyle D.: *See—*
Katter, Lincoln E.; and Galbraith, Lyle D., 3,801,127.

Gale, George Martin: *See—*
Paul, Keith Thomas; Gale, George Martin; and Humpidge, Richard Thomas, 3,800,597.

Gale, Lee G.; and Savage, Donald V. Vehicle weighing device with a balanced electrical bridge. 3,800,895, Cl. 177-136.000.

Galli, Remo: *See—*
Minisci, Prancesco; Bertini, Franco; Galli, Remo; and Quilico, Adolfo, 3,801,580.

Gallo, Paul Joseph, Jr.; and Schorr, Anthony Joseph, to Bell Telephone Laboratories, Incorporated. Microelectronic packages. 3,801,728, Cl. 174-52.00s.

Gamarra, Jose P.; and Swidler, Ronald, to Cotton, Incorporated. Noncatalytic durable press process for treating cellulosic material using formaldehyde vapor and post-heating. 3,801,277, Cl. 8-182.000.

Gamell, Joseph A., to Gamell, Joseph, Industries, Incorporated. Power generating system. 3,800,528, Cl. 60-227.000.

Gamell, Joseph, Industries, Incorporated: *See—*
Gamell, Joseph A., 3,800,528.

Garbe, Dietmar Rudolf; and McDonnell, Harry. Apparatus and method for incontinence control. 3,800,800, Cl. 128-408.000.

Gardiner, Philip M., 1/4 each to Beaver, Jeffrey B.; Gaulet, Real J.; and Zion, Julius. Furnace for separation of volatile constituents of ores. 3,801,081, Cl. 266-17.000.

Garlock Inc.: *See—*
Massenger, Edward J., 3,801,111.

Gask, Bryan R., to Prent Corporation. Thermoformed container. 3,800,998, Cl. 229-2.500.

Gatzi, Karl: *See—*
Payot, Pierre H.; and Gatzi, Karl, 3,801,641.
Reichel, Erika; and Gatzi, Karl, 3,801,571.

Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,800,375.

Gavini, Anibal: *See—*
Eastwood, H. Keith; Johannes, Robert; Griffiths, Clifford H.; and Gavini, Anibal, 3,801,824.

Gawlick, Heinz; Schatz, Arthur; and Mothes, Heinz, to Dynamit Nobel Aktiengesellschaft. Projectile for training ammunition. 3,800,706, Cl. 102-92.700.

Gayner, Herbert; and Smith, David A., to Aluminum Company of America. Method of establishing a shielded container wall opening. 3,800,395, Cl. 29-413.000.

Gdovichin, George G., to Jabco, Inc. Cable dispensing reel assembly. 3,801,752, Cl. 191-12.20r.

Gebien, Willard, to Bel-Air Tool, Die & Engineering Company. Self-cleaning grill for portable charcoal cooking unit. 3,800,777, Cl. 126-25.00r.

Gebr. Bohler & Co. Aktiengesellschaft: *See—*
Fischer, Ernst, 3,800,892.

Holzgruber, Wolfgang; Machner, Peter; Kleinhagauer, Otmar; and Matzer, Josef, 3,801,153.

Geenens, Leo. Lighting fixture assembly for tunnels and other locations. 3,801,811, Cl. 240-51.11r.

Geiger, Rolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of des-phenylalanin bi-insulin. 3,801,564, Cl. 260-112.700.

Geisthoff, Hubert: *See—*
Buthe, Theo; and Geisthoff, Hubert, 3,800,558.

Geluk, Ronald Jan, to N.V. Optische Industrie "De Oude Delft". Method of making an output filter for an image intensifier tube with color reproduction and an output made according to this method. 3,801,739, Cl. 178-7.850.

Genbauffe, Francis S.: *See—*
Branson, Charles D.; and Genbauffe, Francis S., 3,801,007.

General Cable Corporation: *See—*
Polizzano, Fred F.; Smith, Stanton M.; and Swiatovy, Edward S., 3,801,359.

General Electric Company: *See—*
Baxter, Walter G., 3,800,631.
Berger, Abe, 3,801,572.
Corman, James C.; Edgar, Robert F.; McLaughlin, Michael H.; and Tompkins, Russell E., 3,801,843.
Eichelberger, Charles W.; and Burke, Hubert K., 3,801,820.
Flitner, David P.; La Haye, Paul G.; and Neugebauer, Franz J., 3,800,861.
Hauser, Ambrose A.; and Auxier, Thomas A., 3,800,864.
Konrad, Charles E., 3,801,796.
Korte, Richard M., 3,801,760.
Liao, Tseng W., 3,801,899.
Morby, John Alfred; and McGann, James Edward, 3,801,875.
Nakata, Roy; Ouyang, Mid; and Starr, Wendell T., 3,801,730.
Nash, Dudley O., 3,800,530.
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,800,410.
O'Connell, William J. J., 3,801,673.
Stefani, Joseph P., 3,801,874.
Tassie, Douglas Pray; and Hougland, Russell Allyn, 3,800,658.
Tassie, Douglas Pray, 3,800,937.
Tiemann, Jerome J., 3,801,883.
West, Thomas G.; Collins, James R.; and Broski, Thomas J., 3,801,867.
Wilkinson, Robert E.; Truitt, Robert B.; Hunter, Richard P.; and Bennett, Ronald E. (said Hunter and Bennett assors. to), 3,801,727.

General Foods Corporation: *See—*
Mahlmann, James P.; and Scarsella, Edward L., 3,801,716.

General Motors Corporation: *See—*
Bavitt, Willis A., Sr., 3,801,845.
Curcio, Joseph; Hufstetler, Perry P.; and Johnson, Roger W., 3,801,772.
Fruchte, Donald R., 3,800,343.
Grabiel, John L. W.; Culver, Mark N.; and Lorenz, Edwin Albert, 3,801,973.
Harris, Thomas A., 3,801,906.
Jacobs, James W., 3,800,675.
Khuntia, Natabara, 3,801,163.
Kikuchi, Tom T., 3,801,926.
Knight, John W., IV; and Savage, Carl M., Jr., 3,801,126.
Koivunen, Erkki A., 3,800,626.
Krom, Lynn C.; and Milton, Thomas J., 3,801,756.
Lambiris, Theodore, 3,800,737.
Lentz, Carl A., 3,800,629.
Mazzarins, Janis, 3,801,164.
Sandor, Bela, 3,801,085.
Thompson, Albert L., 3,800,765.
Tobin, Michael F., 3,800,557.
Warwick, Edward H., 3,800,920.
Weibel, John, Jr.; and Widdowson, Richard E., 3,800,551.

General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi, 3,801,914.

General Tire & Rubber Company, The: *See—*
Cobbledick, David S., 3,801,687.

Gensler, Edwin G.: *See—*
Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., 3,801,122.

Georgi, Heinz W., to Ivac Corporation. Method and apparatus for fluid flow control. 3,800,794, Cl. 128-214.00e.

Gerlach, Hans Georg, to U.S. Philips Corporation. Television camera tube. 3,801,855, Cl. 315-14.000.

Gershberg, David N.; and Lee, Alex Y., to E-Systems, Incorporated. Ultrasonic-microwave doppler intrusion alarm system. 3,801,978, Cl. 340-258.00a.

Gertsch AG, mesne: *See—*
Droz, Francois, 3,801,118.

Gesing, Horst: *See—*
Schimmer, Rigobert; Gesing, Horst; Beerwerth, Wolfgang; and Messerschmidt, Jurgen, 3,800,408.

Getty Oil Company: *See—*
Friedman, Robert H., 3,800,872.

Gewerkschaft Eisenhutte Westfalia: *See—*
Holken, Norbert; and Meya, Hans, 3,800,546.
Lobbe, Armin, 3,800,549.

Ghirga, Marcello: *See—*
Bertoline, Natale; Calcagno, Benedetto; and Ghirga, Marcello, 3,801,665.

Gianessi, Albert, to Caterpillar Tractor Company. Bulldozer lift cylinder arrangement. 3,800,885, Cl. 172-809.000.

Giannini, Gabriel M. Discharge tube apparatus. 3,801,853, Cl. 313-267.000.

Giebeler, Robert Henry, to Varian Associates. Modulator circuit for a high power linear beam tube. 3,801,854, Cl. 315-5.290.

Gilbert, Dixie E., to Phillips Petroleum Company. Closing mold halves on stretched portion of individual parison preform at orientation temperature. 3,801,690, Cl. 264-99.000.

Gildemeister, Donald, to N L Industries, Inc. Metal baseball bat. 3,801,098, Cl. 273-72.00a.

Gillen, William P. Coordinate table. 3,801,090, Cl. 269-60.000.

Gillette Company, The: *See—*
Hyland, Francis B.; and Mackiernan, Angus W., 3,801,203.

Ginsburgh, Irwin: *See—*
Rhodes, Joseph C.; and Ginsburgh, Irwin, 3,800,768.

Giovanni, Sesto San: *See—*
Portinari, Giovanni; Giovanni, Sesto San; and Brovedan, Antonio, 3,801,729.

Girault, Pierre: *See—*
Perronnet, Jacques; and Girault, Pierre, 3,801,302.

Girling Limited: *See—*
Jones, Peter, 3,800,538.
Sutton, Christopher John, 3,801,829.

Gith, Walter: *See—*
Kamp, Heinz; and Gith, Walter, 3,801,031.

Giulie, Joseph D. Hanger and binder unit. 3,801,175, Cl. 312-184.000.

Givaudan Corporation: *See—*
Naegeli, Peter, 3,801,600.

Gladwin, Floyd R. Apparatus for milling large radius curves. 3,800,660, Cl. 90-13.00r.

Glass Laboratories Company: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,801,417.

Glass, Marvin and Associates: *See—*
Licitis, Conars, 3,801,110.

Glassey, Stephen F.; Hahn, Allan C.; and Shellenbaum, Dale L., to Caterpillar Tractor Company. Cylinder liner with centering tabs defining coolant passages there-between. 3,800,751, Cl. 123-44.840.

Glasurit-Werke M. Winkelmann A.G.: *See—*
Keller, Peter, 3,801,347.

Glaverbel S.A.: *See—*
Brichard, Claude, 3,801,411.
Brichard, Claude, 3,801,412.
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,800,983.
Lambert, Michael; Neuzy, Hubert; and Brichard, Claude, 3,801,296.
Toussaint, Robert; and Boonen, Henry, 3,801,297.
Van Laethem, Robert; and Baudin, Pol, 3,801,423.

Glaxo Laboratories Limited: *See—*
Eildes, Robert Anthony; Potts, James Rowland; and Farthing, John Eaton, 3,801,458.

Gleason, John O'Farrell. Method for cleaning fabrics and clothes. 3,801,274, Cl. 8-142.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Hatanaka, Yoshihiro; and Shigemori, Hideto, 3,801,805.
Onoe, Katsuhiko; and Tanaka, Mitsuyoshi, 3,801,777.

Glowacki, Matthew P. Table support construction and mounting. 3,801,054, Cl. 248-188.700.

Gobler, Harry W.: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,801,076.

Godtner, Albert, to Kautex-Werk Reinold Hagen. Apparatus for making tubular parisons of thermoplastic material. 3,801,254, Cl. 425-380.000.

Goebel, Konrad, to Kraftwerk Union Aktiengesellschaft. Combined gas-steam power plant. 3,801,793, Cl. 290-2.000.

Goeppinger, Edward J.; and Guthrie, David E., to Bourns, Inc. Optical mark sense reader for tab cards. 3,801,776, Cl. 235-61.11e.

Goffe, William L., to Xerox Corporation. Imaging system. 3,801,314, Cl. 96-1.00r.

Goffinet, Bernard, to Roussel-UCLAF. Derivatives of dinorcholestane and process. 3,801,607, Cl. 260-397.100.

Gogle, George D., to Chevron Research Company. Integrated process combining catalytic cracking with hydrotreating. 3,801,495, Cl. 208-97.000.

Goldalian, Jack, Jr.: *See—*
McKnight, James J.; and Goldalian, Jack, Jr., 3,800,792.

Goldenberg, Emmanuel: *See—*
Dawans, Francois; and Goldenberg, Emmanuel, 3,801,674.

Goldstein, Alma W.: *See—*
Martin, Jerry Roy; and Goldstein, Alma W., 3,801,465.

Goldsworthy Engineering, Inc., mesne: *See—*
Goldsworthy, William B.; and Hardesty, Ethridge E., 3,801,407.

Goldsworthy, William B.; and Hardesty, Ethridge E., to Goldsworthy Engineering, Inc., mesne. Apparatus and method for producing plastic reinforced sheet laminates. 3,801,407, Cl. 156-380.000.

Gonsior, Franz, to ITT Industries, Inc. Flow safety valve for liquids. 3,800,827, Cl. 137-614.200.

Good, William E.; and Davies, Arthur S., to Kelsey-Hayer Company. Cable welding tool. 3,800,997, Cl. 228-3.000.

Goodale, William B., to Ford Motor Company. Hydraulic steering system having auxiliary power source. 3,800,900, Cl. 180-79.20r.

Goodell, Frank S.: *See—*
Hosterman, Thomas J.; and Goodell, Frank S., 3,801,051.

Goodland, Donald E.: *See—*
Parsons, John T.; and Goodland, Donald E., 3,801,219.

Goodman, Daniel J. Safety-anchored multi-conductor water-cooled electric arc furnace cable. 3,801,724, Cl. 174-15.00c.

Goodman, David M. Cathode ray tubes with target screens and the manufacture thereof. 3,801,817, Cl. 250-365.000.

Goodwin, Norman W.: *See—*
Abbink, Henry C.; and Goodwin, Norman W., 3,800,411.

Goodyear Aerospace Corporation: *See—*
Cook, Richard L., 3,801,425.

Goodyear Tire & Rubber Company, The: *See—*
Cook, Albert W.; and Dernovshek, Joseph F., 3,800,392.
Hogan, James J., 3,801,957.
Hunter, Edward E., 3,800,742.
Ofstead, Eilert A.; and Calderon, Nissim, 3,801,559.
Suter, Charles A., 3,801,402.
Wach, Andrew P., 3,800,610.

Goran, Michael B., to Bendix Corporation, The. Surge sensor based on engine mount deflection. 3,800,599, Cl. 73-116.000.

Gordon, Irving: *See—*
Baranauckas, Charles F.; and Gordon, Irving, 3,801,677.

Gorlach, Helmut; Stroot, Walter; and Kreckl, Alois, to Akzona Incorporated. Multilayer fibrous insulating article. 3,801,422, Cl. 161-82.000.

Gorlov, Semen Maximovich: *See—*
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.

Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishanan, to Lilly, Eli, and Company. Antibiotic A16886 and process for production thereof. 3,801,464, Cl. 195-80.00r.

Gorski, Stanley R., to Teletype Corporation. Input for shift registers. 3,801,826, Cl. 307-221.00c.

Goshgarian, Haig, to TRW Inc. Package for microwave semiconductor device. 3,801,938, Cl. 333-84.00m.

Gospoear, Wwinhard, to Volkswagenwerk Aktiengesellschaft. Process for preheating an exhaust gas purifying device. 3,800,772, Cl. 60-274.000.

Goto, Kazuo: *See—*
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.

Goto, Kenji; and Mizuno, Kiyohiko, to Messrs, Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recycling system. 3,800,764, Cl. 123-119.00a.

Goto, Masaru; and Iso, Mitsuo, to Hitachi Shipbuilding and Engineering. Apparatus for marking moving bars such as steel rails. 3,800,696, Cl. 101-6.000.

Gotthold, John Phillip. Rotary engine or pump. 3,801,237, Cl. 418-36.000.

Gotzenberger, Adolf; and Scheeweiss, Manfred, to Audi nsu Auto Union Aktiengesellschaft. Gear drive for motor vehicles. 3,801,125, Cl. 280-96.000.

Gotzl, Horst; and Rattner, Manfred, to Siemens Aktiengesellschaft. Movable X-ray examining device. 3,801,790, Cl. 250-523.000.

Gould Inc.: *See—*
Jaggard, Arthur M., 3,801,375.

Goulder, J., & Sons Limited: *See—*
Munro, Robert G.; and Hale, Rodney B., 3,800,423.

Goulds Pumps, Incorporated: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,801,226.
Osborne, William C., 3,801,215.

Gournelle, Maurice Paul. Apparatus for making containers of thermoplastic sheet material. 3,800,682, Cl. 93-59.0mt.

Grabiel, John L. W.; Culver, Mark N.; and Lorenz, Edwin Albert, to General Motors Corporation. Emission sensor. 3,801,973, Cl. 340-237.00r.

Grace, W. R., & Co.: *See—*
Boulton, Richard C., 3,800,741.

Grace, W. R., & Company: *See—*
Pearson, Daniel, 3,800,497.

Graff, Henry: *See—*
Greenberg, Theodore H., 3,801,101.

Graffman, John Holger. Injector carburetor. 3,800,769, Cl. 123-139.0aw.

Graham, Hugh S.: *See—*
Hughes, Charles R.; and Graham, Hugh S., 3,800,522.

Grangaard, Orrin H.; and Peake, Ernest R., to Environmental Research Corporation. Direct draw amplifier for magnetic deflection cathode ray tubes. 3,801,858, Cl. 315-27.0td.

Grant, Louis A., Inc.: *See—*
Barron, George E.; and Pavone, Harry, 3,800,965.

Grass, Jerome A.: *See—*
Parsons, John T.; and Goodland, Donald E., 3,801,219.

Grassl, Erwin. Electromagnetic relay. 3,801,940, Cl. 335-135.000.

Gravis, Merle C.; and Beer, Martin, to Information Consultants, Inc. Destruction and disposal device for hyprodermic syringes or the like. 3,800,644, Cl. 83-145.000.

Gray, Robert Borland, to Coats, J. & P., Limited. Process for producing dyed and cleaned material. 3,801,276, Cl. 8-158.000.

Grayson, Martin, to American Cyanamid Company. 3,5-Di-L-alkylphenyl phosphonates. 3,801,681, Cl. 260-953.000.

Greber, Gerd: *See—*
Lohmann, Dieter; and Greber, Gerd, 3,801,614.

Green, Franklin L. Combination electrical switch. 3,801,761, Cl. 200-43.000.

Green, Parish O. Credit card cleaning system. 3,800,349, Cl. 15-4.000.

Greenberg, Theodore H., 45% to Graff, Henry and 10% to Fishkin, Richard. Portable simulated golf game. 3,801,101, Cl. 273-87.200.

Greenblatt, Allan: *See—*
Greenblatt, David; and Greenblatt, Allan, 3,800,445.

Greenblatt, David; and Greenblatt, Allan. Method and apparatus for making scuff slippers and the like. 3,800,445, Cl. 36-14.000.

Greenblatt, Stanley L. Method and apparatus for automatically combining textual and graphic matter. 3,801,201, Cl. 355-40.000.

Gregory, David A.: *See—*
Gyongyosi, Laszlo; and Gregory, David A., 3,800,890.

Gregory, Francis W. Horse Boot. 3,800,504, Cl. 54-82.000.

Gregory, Joseph J.; and Randolph, Jack R. Method for removal of lithography from containers. 3,801,369, Cl. 134-6.000.

Grieco, Michael F. Cold sterilization unit. 3,801,279, Cl. 21-87.000.

Griepentrog, Dal Frank; and Gries, Robert Joseph, to RCA Corporation. Instant-on circuit for a television receiver. 3,801,856, Cl. 315-20.000.

Gries, Robert Joseph: *See—*
Griepentrog, Dal Frank; and Gries, Robert Joseph, 3,801,856.

Griese, Alfons; Kalisch, Alfons A.; and Luz, Hans G., to Institut Dr. Friedrich Forster Prufgeratebau. Apparatus for producing a region free from interfering magnetic fields. 3,801,877, Cl. 317-157.500.

Griffin, Donald R. Electrically powered bicycle. 3,800,898, Cl. 180-31.000.

Griffiths, Clifford H.: *See—*
Eastwood, H. Keith; Johannes, Robert; Griffiths, Clifford H.; and Gavini, Anibal, 3,801,824.

Groat, Roy Francis; and Satre, Cliff Wayne. Bulk meltable solids transport system. 3,800,818, Cl. 137-334.000.

Grochowski, Edward G.: *See—*
Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., 3,801,836.

Groetschel, Karl Maria. Roof support for use in mine workings. 3,800,545, Cl. 61-45.00d.

Grolig, Johann; Scharfe, Gerhard; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of dichloroacetoxypropane. 3,801,626, Cl. 260-491.000.

Gropp, Karl H.; and Hausch, Raymond M., to Ford Motor Company. Self-cleaning engine poppet valve. 3,800,817, Cl. 137-242.000.

Gross-Given Manufacturing Company: *See—*
Lotspeich, Joseph A., 3,801,876.

Grotheer, Robert: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,801,076.

Grout, Kenneth M.; and Devellian, Richard D., to Kenics Corporation. System and method for distributing highly viscous melten material. 3,800,985, Cl. 222-146.00h.

Grove, Louis C., Jr.; Harder, John E.; Kennon, Richard D.; and Santilli, James N., to Westinghouse Electric Corporation. Transient voltage limiter for series capacitors. 3,801,870, Cl. 317-12.00a.

Grove, Robert H.; De Torre, Robert P.; and Dahlberg, John R., to PPG Industries, Inc. Method for and an apparatus for cutting glass. 3,800,991, Cl. 225-2.000.

Gruchmann, Dietmar: *See—*
Borner, Manfred; Guttmann, Joachim; Loffler, Werner; and Gruchmann, Dietmar, 3,800,388.

Grundig E.M.V. Electro-Mechanische Versuchsanstalt: *See—*
Emmert, Reinhold, 3,801,039.

GTE Lenkurt Incorporated, mesne: *See—*
Stumpf, Gene L.; and Tweed, Donald G., 3,801,873.

GTE Sylvania Incorporated: *See—*
Arken, Theodore; and Mallery, Lawrence E., 3,800,590.
Detrick, Harry Rodney; and Harshbarger, Roland N., 3,801,410.
Johnson, Warren M., 3,801,808.
Lefevre, Paul Eshelman, 3,801,897.
Muszkiewicz, Robert P., 3,801,922.

Guehler, Paul F.; and Hofacker, David A., to Minnesota Mining and Manufacturing Company. Humidity control means and packages containing the same. 3,801,011, Cl. 239-34.000.

Guenantin, Jean. Hardenable composition with resinous binder containing spheroidal micronic inorganic particles. 3,801,536, Cl. 260-40.00r.

Guichard, Claude Pierre Albert Louis: *See—*
Chaulet, Roger Louis; Guichard, Claude Pierre Albert Louis; Menissier, Pierre Lucien; and Soret, Jean-Claude Georges, 3,800,848.

Gulbierz, Joseph E., to United States of America, Army. Flexible blast fragment blanket. 3,801,416, Cl. 161-36.000.

Gulf & Western Manufacturing Company, mesne: *See—*
Cotter, William L., 3,801,977.

Gulf Research & Development Company: *See—*
Kobylinski, Thaddeus P.; and Taylor, Brian W., 3,801,697.

Gull Airborne Instruments, Inc.: *See—*
Horowitz, Martin, 3,801,902.

Gundlach, Robert W.; Mammino, Joseph; Amidon, Alan B.; and Carr, George P., to Xerox Corporation. Gravure imaging system. 3,801,315, Cl. 96-1.400.

Gunia, Klaus, to Friedr' Remy Nachfolger KG. Ribbed concrete slab. 3,800,491, Cl. 52-602.000.

Gustavsson, Olov Erland. Apparatus for shrinking a wrapping around a transport unit by means of radiant energy. 3,801,246, Cl. 425-174.400.

Gustison, Robert A. Method for the addition of metals to steel. 3,801,308, Cl. 75-129.000.

Guthrie, David E.: *See*—
Goeppinger, Edward J.; and Guthrie, David E., 3,801,776.

Gutner, Kenneth H. Door latching structure. 3,801,143, Cl. 292-76.000.

Guttmann, Joachim: *See*—
Borner, Manfred; Guttmann, Joachim; Loffler, Werner; and Gruchmann, Dietmar, 3,800,388.

Guttmann, Stephan; Pless, Janos; and Bossert, Heinz, to Sandoz Ltd. Derivatives of salmon thyrocalcitonin. 3,801,561, Cl. 260-112.500.

Gwinner, Dietrich: *See*—
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,800,526.

Gyertyanffy, Valentin: *See*—
Wiedemann, Fritz; and Gyertyanffy, Valentin, 3,800,678.

Gyongyosi, Laszlo; and Gregory, David A., to Ingersoll-Rand Company. Dust control system. 3,800,890, Cl. 175-209.000.

Haans, Petrus Franciscus Antonius: *See*—
Van Roosmalen, Johannes Hendrikus Theodorus; Haans, Petrus Franciscus Antonius; Van Esdonk, Johannes; and Hornman, Johannes Petrus, 3,801,848.

Haberrecker, Klaus, to Siemens Aktiengesellschaft. X-ray tube with a rotary anode. 3,801,846, Cl. 313-60.000.

Hack, Helmuth: *See*—
Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, 3,801,589.

Hagan, Melvin A.; and Batista, Roy I., to TRW Inc. Tantalum clad niobium. 3,800,406, Cl. 29-480.000.

Hahn, Allan C.: *See*—
Glassey, Stephen F.; Hahn, Allan C.; and Shellenbaum, Dale L., 3,800,751.

Hale, Richard A., to International Harvester Company. IPTO speed limiting control valve. 3,800,926, Cl. 192-.084.

Hale, Rodney B.: *See*—
Munro, Robert G.; and Hale, Rodney B., 3,800,423.

Hall, Albert E., to Neptune Meters Limited. Drive gearing for generator of electrical signal pulses. 3,801,841, Cl. 310-37.000.

Hall, Gilbert D.; and Purpura, Paul. Connecting structure for timbers. 3,800,494, Cl. 52-753.00t.

Halsey, Carl C.: *See*—
Bewell, Robert G. S.; Austin, Carl C.; Halsey, Carl C.; and Smith, Myron R., 3,800,704.

Ham, John E., to Jackson, Bryon, Inc. Electrohydraulic control system. 3,800,962, Cl. 214-2.500.

Hamada, Shinji: *See*—
Miyata, Tomiaki; Hamada, Shinji; Watanabe, Shigenobu; and Ogawa, Toshiko, 3,800,432.

Hamann, Gunter; and Zschieschank, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Measuring device for electrical components. 3,801,909, Cl. 324-158.00f.

Hamaswamy, Vellayan; and Standley, Robert Dean, to Bell Telephone Laboratories, Incorporated. Switch for thin-film optics. 3,801,185, Cl. 350-160.00r.

Hamburger, Brigitte: *See*—
Paulus, Wilfried; Hamburger, Brigitte; and Pauli, Otto, 3,801,576.

Hamilton, James R. Crimping device. 3,800,387, Cl. 29-200.00b.

Hammann, Ingeborg: *See*—
Hoffman, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,801,679.

Hammersmith, James R.: *See*—
Reynolds, Martin Lance; and Hammersmith, James R., 3,800,808.

Hammond, John W.: *See*—
O'Brien, James P.; and Hammond, John W., 3,801,742.

Hanna, Harry A.: *See*—
Cornelis, Clarence C.; and Hanna, Harry A., 3,801,418.

Hanney, Philip Michael; and Staniforth, Thomas Raymond, said Staniforth assor. to Bentley Engineering Company Limited, The. Machine for and method of knitting stocking with closed toe. 3,800,560, Cl. 66-14.000.

Hannie, Jack J., to Jones, J. A., Construction Company. Boom orientation and load capacity indicator. 3,800,425, Cl. 33-333.000.

Hanscom, Genevieve I.; formerly Magnuson, Genevieve I.: *See*—
Smith, Traver J., 3,801,715.

Hansen, Guenter: *See*—
Baumann, Hans; Einwiller, Andreas; and Hansen, Guenter, 3,801,596.

Hansen, Kenneth N., to Allis-Chalmers Corporation. Control lever to actuate remote shift lever. 3,800,924, Cl. 192-4.00a.

Hansen, Ralph D. Unit for attaching electric fence wire to a supporting post. 3,801,731, Cl. 174-163.00f.

Hansom, Genevieve I.; Magnuson, Robert; Thomson, Lois J.; formerly Duggan, Lois J., as trustees of the estate of Magnuson, Roy M.: *See*—
Smith, Traver J., 3,801,715.

Hapgood, William H., to Raytheon Company. Heat transfer structure. 3,800,747, Cl. 122-235.00r.

Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, to Hitachi, Ltd. Multilayer interconnected structure for semiconductor integrated circuit and process for manufacturing the same. 3,801,880, Cl. 317-234.00r.

Harder, John E.: *See*—
Grove, Louis C., Jr.; Harder, John E.; Kennon, Richard D.; and Santilli, James N., 3,801,870.

Hardesty, Ethridge E.: *See*—
Goldsworthy, William B.; and Hardesty, Ethridge E., 3,801,407.

Hardin, George T., to Robertshaw Controls Company. Time schedule controller and parts and system therefor. 3,800,862, Cl. 165-12.000.

Hardy, William C.; Schultze, Edward F.; and Shepard, John C., to Sun Oil Company (Delaware). Wellbore gravel pack method. 3,800,875, Cl. 166-276.000.

Harper, Jack R., to Dow Corning Corporation. Process for molding a flexible mold. 3,801,430, Cl. 161-184.000.

Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., to United States of America, Agriculture. Cross dyeing fiber blends of polyurethane, polyacrylate or butadiene-acrylonitrile copolymer coated cotton fibers with dispere and reactive dyes. 3,800,375, Cl. 28-72.160.

Harrington, Edward F., Jr. Method of fabricating multiple-ply bellows. 3,800,398, Cl. 29-423.000.

Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., to Minnesota Mining and Manufacturing Company. Certain perfluoroalkylsulfonamidathiazoles. 3,801,588, Cl. 260-306.80r.

Harris, Lewis Karl, to Combustion Engineering, Inc. Valve actuator. 3,801,064, Cl. 251-73.000.

Harris, Roger Lawrence Newton; and Spaun, Rodiger, to Ciba-Geigy Corporation. Derivatives of 2-mercapto-pyrido [1,2-b]-1,2,4-thiadiazolium salts. 3,801,583, Cl. 260-294.80c.

Harris, Stephen F.; and Kung, Andrew H. Optical radiation frequency converter employing phase matched mixtures of inert gases and method. 3,801,797, Cl. 307-88.300.

Harris, Thomas A., to General Motors Corporation. Digital frequency meter. 3,801,906, Cl. 324-78.00d.

Harris-Intertype Corporation: *See*—
Cotten, Whitworth W., Jr., 3,801,748.
Kist, Karl E.; and Elmore, Donald F., 3,800,698.

Harrison, Ian T.: *See*—
Pfister, Jorg R.; Harrison, Ian T.; and Fried, John H., 3,801,598.

Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszlo, to Chinoin-Gyogyszer Es Vegyeszeti Termekek. 7-2-Hydroxy-3-(N-methyl-2-hydroxy-ethylamino)-propyl -theophylline-2-(4-chlorophenoxy)-isobutyrate. 3,801,578, Cl. 260-253.000

Harshbarger, Roland N.: *See*—
Detrick, Harry Rodney; and Harshbarger, Roland N., 3,801,410.

Hart, Peter J.; and Friedli, Hans R., to Dow Chemical Company, The. Selective process for the continuous dehydrogenation of nonaromatic hydrocarbons. 3,801,661, Cl. 260-666.00a.

Hartmann, Lester M., to Chevron Research Company. Pneumatic tool lubricant. 3,801,503, Cl. 252-18.000.

Hartmann, Peter; and Roos, Ernst, to Bayer Aktiengesellschaft. Process for the preparation of 6-hydroxy chromans. 3,801,603, Cl. 260-345.500.

Hartwig, Ernst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Disperse dyes of the anthraquinone series. 3,801,595, Cl. 260-325.000.

Harvey, Edgar D. Multiblade snowplow vehicle. 3,800,447, Cl. 37-41.000.

Harvey, Richard, to Harvey, William H., Company. Pipe spacer. 3,800,486, Cl. 52-98.000.

Harvey, William H., Company: *See*—
Harvey, Richard, 3,800,486.

Hasler, Robin, to Imperial Chemical Industries Limited. Production of thermoplastic films. 3,801,036, Cl. 242-56.200.

Hasler, William Sandford; and Taylor, Lawrence. Yarn cutting device. 3,800,642, Cl. 83-98.000.

Hasselbed, Fritz Victor: *See*—
Johansson, Lennart Ragnar; and Tenne, Lave, 3,800,684.

Hatanaka, Yoshihiro; and Shigemori, Hideto, to Glory Kogyo Kabushiki Kaisha. Automatic money dispensing machine. 3,801,805, Cl. 235-177.000.

Hauni-Werke Korber & Co. KG: *See*—
Elsner, Uwe, 3,801,024.

Hausch, Raymond M.: *See*—
Gropp, Karl H.; and Hausch, Raymond M., 3,800,817.

Hauser, Ambrose A.; and Auxier, Thomas A., to General Electric Company. Pin-fin cooling system. 3,800,864, Cl. 165-47.000.

Hauser, Hans; and Jones, Ronald N., to Foote, J. B., Foundry Co., The. Shift mechanism. 3,800,603, Cl. 74-473.00r.

Haward, Robert N.: *See*—
Fletcher, Kenneth L.; and Haward, Robert N., 3,801,558.

Hawkes, Ralph O.: *See*—
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Hawthorne, Vaughn T., to Keystone Industries, Inc. End of car cushioning device for railway car. 3,800,961, Cl. 213-8.000.

Hayakawa, Hayashi: *See*—
Nishino, Atsushi; Kumano, Hiroshi; and Hayakawa, Hayashi, 3,801,479.

Hayashi, Izuo, to Bell Telephone Laboratories, Incorporated. Singles heterostructure junction lasers. 3,801,928, Cl. 331-94.50d.

Hayashi, Keizo, to Tokyo Rokuon Kogyo Kabushiki Kaisha. Automatic telephone recorder controlling device sensitive to calling subscriber interruption of service. 3,801,744, Cl. 179-6.00r.

Hayashi, Kenji: *See*—
Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, 3,801,368.

Hayashi, Seiichi: *See*—
Hirata, Junichi; Hayashi, Seiichi; and Sakai, Kazuo, 3,800,942.

Hayashibara Company: *See*—
Mitsuhashi, Masakazu; and Hirao, Mamoru, 3,801,462.
Miyake, Toshio; and Shiosaka, Makuto, 3,801,461.

Hayden, Douglas B., Jr.: *See*—
Eddleman, William L., 3,801,481.

Hayes, Edward O., 50% to Stoltz, James L. Foam generator. 3,801,015, Cl. 239-175.000.

Haynie, Jack J.; Roland, David H.; and Simpson, Torrence, Jr., to Jones, J. A., Construction Company. Extendible boom and mast trailer. 3,801,132, Cl. 280-404.000.

Hays, Gordon W.; and Hollenton, Frank, to AMF Incorporated. Device for stretching a sheet of strip of material. 3,800,807, Cl. 131-147.00r.

Hedrick, Glen W.: *See*—
Lewis, John B.; and Hedrick, Glen W., 3,801,649.

Heenan, William A. Ventillation of nuclear reactor fuel rods. 3,801,447, Cl. 176-40.000.

Heflinger, Lee O.: *See*—
Wuerker, Ralph F.; and Heflinger, Lee O., 3,801,930.

Heflinger, Lee O.; and Wuerker, Ralph F., to TRW Inc. Single mode laser oscillator with linear resonator and internal faraday isolator. 3,801,931, Cl. 331-94.500.

Heger, Adolf; and Wittig, Frank, to VEB Textilkombinat Cottbus. Process of metallizing polymeric materials. 3,801,478, Cl. 204-22.000.

Heil Co., The, mesne: *See*—
Lindl, Gordon J., 3,801,264.

Heilhecker, Joe K.: *See*—
Love, William W.; Lock, Everett H.; Maurer, William C.; and Heilhecker, Joe K., 3,801,234.

Heim Universal Corporation: *See*—
Rozentals, Alfreds, 3,801,171.

Heimbach, Heinrich: *See*—
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Heine, Henry, to Preston Lock Company; division of Walter Kidde & Company, Inc. Combination lock. 3,800,571, Cl. 70-71.000.

Heiser, E. Franklin; and Kulick, Andrew, to Ranco Incorporated. Thermostatic control structure. 3,801,948, Cl. 337-380.000.

Heit, Allyn H., to Sybron Corporation. Composition for treating aqueous alkaline fuel. 3,800,466, Cl. 44-4.000.

Helfenberger, Hans; and Lutz, Karl, to Sandoz Ltd. Phosphoric and thiophosphoric acid derivatives of quinoxaline. 3,801,577, Cl. 260-250.00r.

Helm, Dietrich, to Schering AG. Method of applying a coating of heat hardenable thickened epoxy resin masses. 3,801,348, Cl. 117-21.000.

Helton, Eugene L.: *See*—
Meinold, Lloyd K.; and Helton, Eugene L., 3,801,210.

Henderson, Stanford A. Combined motor and rotary fluid device. 3,801,229, Cl. 417-359.000.

Hendrick, Fred W., to Robertshaw Controls Company. Convertible burner. 3,801,259, Cl. 431-285.000.

Hendrickson, Yngve Gust; and King, John M., to Chevron Research Company. Sulfurized metal phenates. 3,801,507, Cl. 252-42.00f.

Hengstler, Robert Edward: *See*—
Smith, Harvell Morton; and Hengstler, Robert Edward, 3,801,243.

Henkel & Cie., GmbH: *See*—
Werdehausen, Achim; and Weiss, Herbert, 3,801,610.

Henrick, Clive A.: *See*—
Willy, William L.; and Henrick, Clive A., 3,801,612.

Henrick, Clive A., to Zoecon Corporation. Novel 2,4-diolefinic 2,2-diesters and cyanoesters. 3,801,608, Cl. 260-399.000.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Oxy-substituted 3,4-alleric fatty acid esters. 3,801,611, Cl. 260-410.90r.

Herbenar, Edward J.; and Calvin, Louis E., to TRW Inc. Fail-safe turn-buckle. 3,801,207, Cl. 403-46.000.

Herbsthofer, Franz L.: *See*—
Karlen, Harvey R.; Eberstein, Ralph; and Herbsthofer, Franz L., 3,800,988.

Hercules Incorporated: *See*—
Booth, Albert B., 3,801,655.
Richwine, John R., 3,801,517.

Herd, David P.; Fowler, John H.; Drouin, Andre H.; and Bush, Robert E., to Rockwell International Corporation. Underwater well completion method and apparatus. 3,800,869, Cl. 166-5.000.

Hermann, Horst M. Overhead conveyor installation. 3,800,707, Cl. 104-94.000.

Herndon, Robert R. Trailer stabilizer. 3,801,128, Cl. 280-150.500.

Hess, Howard V.; and Cole, Edward L. Apparatus for removing oil from water. 3,800,950, Cl. 210-242.000.

Heugebaert, Frans Clement: *See*—
Brinckman, Eric Maria; Heugebaert, Frans Clement; and Ceulemans, Renaat Andreas, 3,801,330.

Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Process for the manufacture of 6-amino-3-carbonyl aminopenam compounds. 3,801,567, Cl. 260-239.100.

Heyek, Walter G. Polishing attachment for belt abrading apparatus. 3,800,479, Cl. 51-236.000.

Heylands, Wilhelmus Franciscus Aloysius. Endless tape cassette. 3,801,035, Cl. 242-55.19a.

Heylen, Paul: *See*—
Verbeke, Roger; and Heylen, Paul, 3,800,857.

Heyne, Clarence A., to Owens-Illinois, Inc. Method of shearing molten glass. 3,800,344, Cl. 6-133.000.

Hibbert, Wayne Greenlee, to Atlantic Products Corporation. Back pack tent of quonset design with side opening for entrance. 3,800,814, Cl. 135-1.00r.

Hicks, Dewin D.: *See*—
Ward, Harold R.; and Hicks, Dewin D., 3,800,535.

Higbee, Roland K., to American Hospital Supply Corporation. Moveable storage cart system. 3,801,176, Cl. 312-199.000.

Higgens, Calvin E.: *See*—
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishanan, 3,801,464.

Higuchi, Norio: *See*—
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.

Hill City Mfg., Inc.: *See*—
Leach, Raymond B., 3,800,919.

Hill, David A. Boat hull cleaning apparatus. 3,800,732, Cl. 114-222.000.

Hill, Edward D. Preformed roller bonded to shaft by dual adhesives. 3,800,366, Cl. 29-132.000.

Hill, Paul R.: *See*—
Wilkins, Daniel R.; and Hill, Paul R., 3,801,445.

Hill, William E., to United States of America, Army. Nitro derivatives of isopropenyl carborane. 3,801,647, Cl. 260-606.50b.

Himes, William H. Cargo platform. 3,800,915, Cl. 187-1.000.

Himmelstein, S., and Company: *See*—
Tveter, Richard S., 3,800,591.

Hinckley, John N., to Beloit College. Engine. 3,801,236, Cl. 418-12.000.

Hirai, Takako: *See*—
Morishita, Hajime; Hirai, Takako; and Nonogaki, Saburo, 3,801,538.

Hirano, Hiroshi: *See*—
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Hirano, Hiroshi, 3,801,683.

Hirano, Mitsumasa: *See*—
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.

Hirao, Mamoru: *See*—
Mitsuhashi, Masakazu; and Hirao, Mamoru, 3,801,462.

Hirata, Junichi; Hayashi, Seiichi; and Sakai, Kazuo, to Hitachi, Ltd. Information card retrieval device. 3,800,942, Cl. 209-80.500.

Hirata, Shinichi: *See*—
Komura, Yasuyuki; Hirata, Shinichi; Fukushima, Takashi; and Ogawa, Mutsuo, 3,801,737.

Hirayama, Takeshi: *See*—
Takimoto, Yasuyuki; Yoshikawa, Toshikazu; Sakurai, Kiyohi; Umeda, Yasusi; and Hirayama, Takeshi, 3,801,328.

Hirose, Iwao: *See*—
Nishikawa, Yukio; Nagao, Yoshio; and Hirose, Iwao, 3,801,200.

Hirose, Tadatsugu: *See*—
Andoh, Shizuo; Urade, Toshinori; and Hirose, Tadatsugu, 3,801,851.

Hirose, Yoshitaka: *See*—
Sano, Yoshiaki; Ishikawa, Tomio; Hirose, Yoshitaka; and Miki, Yasumasa, 3,801,331.

Hirsch, Irving A.: *See*—
Stark, Donald R.; and Hirsch, Irving A., 3,800,727.

Hitachi, Ltd.: *See*—
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.
Hirata, Junichi; Hayashi, Seiichi; and Sakai, Kazuo, 3,800,942.
Imaizumi, Ichiro; Taniguchi, Kenji; and Hotta, Atsuo, 3,801,886.
Kamei, Tatsuya; Ogawa, Takuzo; Kodera, Hiroshi; and Kanda, Yozo, 3,801,885.
Kato, Hidemasa; Inoue, Kiyoshi; and Imai, Munemaro, 3,801,439.
Kawabe, Ushio; Kudo, Mitsuhiro; and Fukase, Shigeo, 3,801,313.
Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, 3,801,509.
Morishita, Hajime; Hirai, Takako; and Nonogaki, Saburo, 3,801,538.
Morishita, Hirosada; Sasaki, Ryusei; Sakashita, Kiyoshi; and Yasui, Eiji, 3,801,427.
Terao, Motoyasu, 3,801,966.
Yamada, Eiichi; Kosa, Yasunobu; and Sato, Eiichiro, 3,801,383.
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.

Hitachi Shipbuilding and Engineering: *See*—
Goto, Masaru; and Iso, Mitsuo, 3,800,696.

Hitzman, Donald O., to Phillips Petroleum Company. Waterflood bacterial viscosifier. 3,801,502, Cl. 252-8.55d.

Hobart Manufacturing Company, The: *See*—
Wilson, Jackie Neal, 3,800,362.

Hobner, Otto. Portable hair dryer hood. 3,800,431, Cl. 34-99.000.

Hodgen, Loran M.; and Weimer, Gary L., to Excel Industries, Inc. Rotary seat back adjuster. 3,801,155, Cl. 297-374.000.

Hodgson, Alfred W., to Westinghouse Electric Corporation. Isolating switch with particular toggle and interlock means therefor. 3,801,765, Cl. 200-153.00g.

Hofacker, David A.: *See*—
Guehler, Paul F.; and Hofacker, David A., 3,801,011.

Hoffman, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. N-(dimethylaminomethylidene)thiolthiono)-phosphoric acid ester imides. 3,801,679, Cl. 260-945.000.

Hoffmann, Werner: *See*—
Pasedach, Heinrich; Bittler, Knut; Francke, Dilihard; and Hoffmann, Werner, 3,801,653.

Hoffmann-La Roche Inc.: *See*—
Cohen, Noal, 3,801,573.
Ning, Robert Ye-Fong; and Sternbach, Henryk, 3,801,569.
Ruegg, Rudolf; and Schmialek, Peter, 3,801,652.

Hoffmeyer, Knud H.; and Wuerker, Charles A., Jr., to Jacobsen Manufacturing Company. Safety grip for powered implement. 3,800,616, Cl. 74-470.000.

Hofmann, George Henry, to Du Pont de Nemours, E. I., and Company Thermal stabilization of acrylic polymers. 3,801,541, Cl. 260-45.85h.

Hogan, James J., to Goodyear Tire & Rubber Company, The. Automatic tire code reader. 3,801,957, Cl. 340-146.30f.

Hogan, John Paul; Kitchen, Alonzo G.; and Kahle, Gerald R., to Phillips Petroleum Company. Carbon dioxide and water treatment of coupled lithium initiated polymer. 3,801,520, Cl. 260-23.70r.

Hogg, Walter R., to Coulter Electronics, Inc. Particle study apparatus including an axial trajectory sensor. 3,801,901, Cl. 324-71.0cp.

Hogg, Walter R. Particle study apparatus including an axial trajectory sensor. 3,801,903, Cl. 324-71.0cp.

Hogg, Walter R.; and Coulter, Wallace H., to Coulter Electronics, Inc. Particle study apparatus including an axial trajectory sensor. 3,801,904, Cl. 324-71.0cp.

Hoglund, Nils O., to Tri-Ordinate Corporation. Cam control grinding machine. 3,800,621, Cl. 74-567.000.

Hohmann, Walter: *See*—
Bien, Hans-Samuel; Hohmann, Walter; Vollman, Geinrich; and Leister, Heinrich, 3,801,606.

Holder, James H., 50% to Perry, Raymond D. Fishing float device. 3,800,460, Cl. 113-44.900.

Holken, Norbert; and Meya, Hans, to Gewerkschaft Eisenhutte Westfalia. Mine roof support frames. 3,800,546, Cl. 61-45.00d.

Holland, Edward T. Material storage and handling system. 3,800,963, Cl. 214-16.40a.

Hollenton, Frank: *See*—
Hays, Gordon W.; and Hollenton, Frank, 3,800,807.

Hollingsworth, Albert A., to Mead Corporation, The. Pipe clamp with captive bridging member. 3,801,141, Cl. 285-236.000.

Holmes, John E.; and Berning, Eugene B. Solenoid actuated valve for anhydrous ammonia flow meters. 3,801,063, Cl. 251-30.000.

Holschele, Guenther Kurt, to Du Pont de Nemours, E. I., and Company. Solid phase polycondensation process. 3,801,547, Cl. 260-75.00m.

Holt, Jack A., to Burke Concrete Accessories, Inc. Form panel with grouting plug core. 3,801,061, Cl. 249-190.000.

Holtzscheiter, Earl W., Jr.: *See*—
Johnson, Everett R.; and Holtzscheiter, Earl W., Jr., 3,801,484.

Holzgruber, Wolfgang; Machner, Peter; Kleinhagauer, Otmar; and Matzer, Josef, to Gebr. Bohler & Co. Aktiengesellschaft. Electroslag remelting apparatus for making metal ingots. 3,801,153, Cl. 164-252.000.

Holzhauer, Hilbert; and Rohra, Alois, to Motoren-und Turbinen-Union Munchen GmbH. Installation for adjusting power turbine guide blades in twin-shaft gas turbine engines especially for the drive of motor vehicles. 3,801,216, Cl. 415-151.000.

Honeywell Inc.: *See*—
Nelson, Richard E., 3,800,828.

Honeywell Information Systems, Inc.: *See*—
Howell, Thomas Harold, 3,801,955.

Hong, Van Y. S., to United States of America, Army. Grease composition. 3,801,505, Cl. 252-25.000.

Hooker Chemical Corporation: *See*—
Jones, A. William, 3,800,602.
Wagner, George M.; and Vullo, William J., 3,801,272.
Weil, Edward D.; and Schlichting, Hans L., 3,801,648.

Hookim, Young; and King, Neil M., to Ambac Industries Incorporated. Gas analyzer circuitry. 3,801,972, Cl. 340-237.00r.

Hopkins, David Alan, to Valeron Corporation, The. Cutting insect. 3,800,379, Cl. 29-95.000.

Horikawa, Takeshi: *See*—
Kubo, Masayoshi; and Horikawa, Takeshi, 3,801,584.

Horner, Jack G.: *See*—
Palumbo, Vincent F.; Rivers, Russell C.; and Horner, Jack G., 3,801,812.

Hornman, Johannes Petrus: *See*—
Van Roosmalen, Johannes Hendrikus Theodorus; Haans, Petrus Franciscus Antonius; Van Esdonk, Johannes; and Hornman, Johannes Petrus, 3,801,848.

Horowitz, Martin, to Gull Airborne Instruments, Inc. Electrical measuring apparatus employing a plurality of condition responsive devices. 3,801,902, Cl. 324-61.00r.

Horrom, Bruce Wayne, to Abbott Laboratories. 3,4,5-Tri-substituted cinnamides. 3,801,636, Cl. 260-558.00a.

Horsewell, Harry G.; Phelpstead, James W. P.; and Brooks, Geoffrey O., to Brown & Williamson Tobacco Corporation. Smoking articles. 3,800,805, Cl. 131-10.300.

Hosler, Peter; and Baillie, Robert A., to Sun Research and Development Company. Separation of liquid isophthalonitrile. 3,801,620, Cl. 260-465.00c.

Hosterman, Thomas J.; and Goodell, Frank S., to United States of America, Air Force. Tow plate. 3,801,051, Cl. 244-137.00r.

Hotta, Atsuo: *See*—
Imaizumi, Ichiro; Taniguchi, Kenji; and Hotta, Atsuo, 3,801,886.

Hougland, Russell Allyn: *See*—
Tassie, Douglas Pray; and Hougland, Russell Allyn, 3,800,658.

Howard, John Francis, to Canadian General Electric Company, Limited. Quick acting high voltage fuse. 3,801,945, Cl. 337-159.000.

Howard, Sol; and Schaaf, Robert, to Air Filters, Inc. Vacuum cleaner nozzel. 3,800,359, Cl. 15-397.000.

Howell, Clarence F.; Brownrigg, John D.; and Cooper, George H., to United States of America, Navy. Low pressure air dehydrator. 3,800,507, Cl. 55-33.000.

Howell, Thomas Harold, to Honeywell Information Systems, Inc. Cyclic code encoder/decoder. 3,801,955, Cl. 340-146.1al.

Hoxeng, Julian S., to McCarty, Bertha J. and Cass, Carroll J. Portable bed bath. 3,800,336, Cl. 4-177.000.

Hruby, John O., Jr., to Rain Jet Corporation. Low profile fountain assembly. 3,801,010, Cl. 239-17.000.

Hrzek, Bohuslav A., to Energy Conversion Devices, Inc. Method for producing an electrical device. 3,801,365, Cl. 117-212.000.

Hubbell, Harvey, Incorporated: *See*—
Carissimi, Vincent L.; and Jaconette, Frank C., Jr., 3,801,757.

Hubbell, James C.: *See*—
Sullivan, Patrick R.; Leidgen, George W.; and Hubbell, James C., 3,800,753.

Huber, Theo: *See*—
Pelte, Richard; Huber, Theo; and Mayr, Helmut, 3,801,194.

Hubscher, Maurice A.: *See*—
Asker, Gunnar C. F.; and Hubscher, Maurice A., 3,800,515.

Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., to Caterpillar Tractor Company. High pressure implement hydraulic circuit. 3,800,670, Cl. 91-420.000.

Huffman, Carl Franklin, to Coca-Cola Company, The. Treatment of fruit juices. 3,801,717, Cl. 426-270.000.

Hufstetler, Perry P.: *See*—
Curcio, Joseph; Hufstetler, Perry P.; and Johnson, Roger W., 3,801,772.

Huggins, Robert W., Jr.: *See*—
Pease, Logan L.; and Huggins, Robert W., Jr., 3,801,837.

Hughes Aircraft Company: *See*—
Bilow, Norman, 3,801,393.
Blair, G. Richard; and Elam, Michael R., 3,801,367.
Bristol, Thomas W., 3,801,937.
Wauk, Michael T., II, 3,800,908.

Hughes, Carter S., Jr. Metal punch. 3,800,419, Cl. 30-358.000.

Hughes, Charles R.; and Graham, Hugh S., to Bethlehem Steel Corporation. Sealed wire rope and strand and method of making. 3,800,522, Cl. 57-149.000.

Hughes, Robert D.; and Steigelmann, Edward F., to Standard Oil Company. Process. 3,800,506, Cl. 55-16.000.

Hughes Tool Company, mesne: *See*—
White, Anderson D.; and Wisler, Allen E., 3,800,891.

Huhse, Peter: *See*—
Rolff, Klaus-Peter; and Huhse, Peter, 3,801,764.

Hulit, Harry J.; and Czaplinski, Thomas V., to Squibb, E. R., & Sons, Inc. Radioactive generator with permeable closure. 3,801,818, Cl. 250-496.000.

Hull, Francis R. Extensible incinerator gas scrubber system with standard ductwork. 3,800,511, Cl. 55-228.000.

Hultquist, Gordon; and Tyler, Patrick J., to Coach and Car Equipment Corporation. Self-locking cushion assembly. 3,801,154, Cl. 297-218.000.

Humpidge, Richard Thomas: *See*—
Paul, Keith Thomas; Gale, George Martin; and Humpidge, Richard Thomas, 3,800,597.

Hunt Electronics Company: *See*—
Faulkner, Harold, 3,801,888.

Hunt, Robert William Gainer; and Dain, Stephen John, to Tintometer Limited, The. Method and means for testing the colour discrimination in vision. 3,801,188, Cl. 351-30.000.

Hunter, Edward E., to Goodyear Tire & Rubber Company, The. Apparatus used in the treatment of tire cord fabric. 3,800,742, Cl. 118-246.000.

Hunter, Richard P.: *See*—
Wilkinson, Robert E.; Truitt, Robert B.; Hunter, Richard P.; and Bennett, Ronald E., 3,801,727.

Hurd, Frank W. Metal reduction process. 3,801,307, Cl. 75-84.500.

Hurley, William J.; and Dempster, Thomas B. Two part container. 3,801,000, Cl. 229-23.00r.

Huster, Edward, deceased (by Huster, Jeanne Peterson, administratrix); Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and

Hawkes, Ralph O., to Envirotech Corporation. Rotary drum vacuum filter. 3,800,953, Cl. 210-401.000.

Huster, Jeanne Peterson, administratrix: *See—*
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Hutchings, Thomas J.; and Zingery, Wilbur L., to United States of America, Navy. Laser accelerometer. 3,800,594, Cl. 73-516.00r.

Hy-Rider Inc.: *See—*
Quick, Robert G., 3,801,138.

Hydra-Mac, Inc.: *See—*
Steiger, Douglas W., 3,800,969.

Hyker, William J., to Willis Oil Tool Company. Well flow control valve. 3,800,822, Cl. 137-489.500.

Hyland, Francis B.; and Mackiernan, Angus W., to Gillette Company, The. System for detecting parallelism of surface edges. 3,801,203, Cl. 356-151.000.

I-T-E Imperial Corporation: *See—*
Zocholl, Stanley E.; and Farinas, Pedro, 3,801,872.

Ichihashi, Hiroshi: *See—*
Shiraishi, Tatsuo; Shimizu, Shinkichi; Atsumi, Akihiko; and Ichihashi, Hiroshi, 3,801,670.

Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Timer device and a camera using said device. 3,801,890, Cl. 318-484.000.

Identicon Corporation: *See—*
Jones, Paul W., 3,801,182.

Illkhonov, Sergie Sergeevich: *See—*
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.

Illinois Tool Works Inc.: *See—*
Barth, Gerald Dean; and Jennings, Ralph Ernest, 3,800,653.
Edwards, Bryant, 3,800,843.

Image Analysing Computers Limited: *See—*
Ablett, Roger John Herbert, 3,801,741.

Imai, Munemaro: *See—*
Kato, Hidemasa; Inoue, Kiyoshi; and Imai, Munemaro, 3,801,439.

Imaizumi, Ichiro; Taniguchi, Kenji; and Hotta, Atsuo, to Hitachi, Ltd. Variable resistance element. 3,801,886, Cl. 317-235.000.

Imamura, Masaharu: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.

Imaoka, Kazuo: *See—*
Kimoto, Ryuzo; Imaoka, Kazuo; Isurushima, Masaaki; and Umemoto, Kojiro, 3,801,622.

Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Priority-frequency system for a signal-seeking receiver. 3,801,914, Cl. 325-334.000.

Imperial Chemical Industries, Limited: *See—*
Birchall, James Derek; Cassidy, John Edward; and Buttrey, Douglas Norton, 3,801,362.
Cheetham, Ian, 3,801,269.
Hasler, Robin, 3,801,036.
Schrewe, Klaus; Knipp, Ullrich; and Ravasz, Akos, 3,801,684.

Improved Machinery Inc.: *See—*
Farrell, Robert E., 3,801,256.

Inada, Nichimu. Electromassager. 3,800,785, Cl. 128-52.000.

Industrie Pirelli Societa per Azioni: *See—*
Portinari, Giovanni; Giovanni, Sesto San; and Brovedan, Antonio, 3,801,729.

Information Consultants, Inc.: *See—*
Gravis, Merle C.; and Beer, Martin, 3,800,644.

Information Utilization Corporation: *See—*
Caiola, Leonard, 3,801,783.

Ingemarsson, Gosta Ingemar. Method and apparatus for continuous pretreatment of wooden chips. 3,801,431, Cl. 162-19.000.

Ingersoll-Rand Company: *See—*
Gyongyosi, Laszlo; and Gregory, David A., 3,800,890.

Innotech Corporation: *See—*
Merrin, Seymour, 3,801,878.
Merrin, Seymour, 3,801,879.

Inoue, Kiyoshi: *See—*
Kato, Hidemasa; Inoue, Kiyoshi; and Imai, Munemaro, 3,801,439.

Insit S.p.A.: *See—*
Debenedetti, Guglielmo, 3,801,406.

Institut Dr. Friedrich Forster Prufgeratebau: *See—*
Griese, Alfons; Kalisch, Alfons A.; and Luz, Hans G., 3,801,877.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Dawans, Francois; and Goldenberg, Emmanuel, 3,801,674.
Juguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,801,516.

Instrument Corporation of America: *See—*
Egerton, McKenny W., Jr., 3,801,738.

Instytut Przemyslu Wiazacych Materialow: *See—*
Karkowski, Abdon; Nowak, Edmund; and Szromba, Roman, 3,801,262.

International Business Machines Corporation: *See—*
Baker, Theodore H.; Chafghaichi, Majid; and Stevens, Richard C., 3,801,905.
Berger, Horst Heinz; Najmann, Knut; Pietrass, Hansgeorg; and Wiedmann, Siegfried, 3,801,967.
Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., 3,801,836.
Jones, Alan L.; Judson, George T.; and Kellogg, Robert M., 3,801,142.
Keller, Guenter; and Olderdissen, Ulrich, 3,801,965.
Moore, Brian B.; and Thorn, Caryl A., 3,801,962.
Moreau, Wayne M., 3,801,327.
Quinn, Hubert F., 3,801,910.

International Computers Limited: *See—*
Maguire, Gerald John; and Scarrott, Gordon George, 3,801,180.

International Fire Tool Corporation: *See—*
Piffath, Rodney S.; and Cole, John J., 3,800,979.

International Harvester Company: *See—*
Fulghum, David A., 3,800,612.
Hale, Richard A., 3,800,926.
Rouse, Paul L., 3,800,803.

International Medical Electronics Ltd.: *See—*
Berry, Fred M.; Shirley, James N.; and Bipsky, Eugene C., 3,800,802.

International Nickel Company, Inc., The: *See—*
Church, Nathan Lewis; and Schelleng, Robert Douglas, 3,801,311.
Robinson, Ronald Dale, 3,800,740.

International Standard Electric Corporation: *See—*
Danton, Jacques J.; Janex, Albert A.; and Martin-Garin, Gerard G., 3,801,980.
Taylor, Terence Francis Edward, 3,800,933.

International Tapetronics Corporation: *See—*
Jenkins, John P., 3,801,043.

International Telephone and Telegraph Corporation: *See—*
Vincent, Arthur Leonard, 3,800,595.

Iowa State University Foundation, Inc.: *See—*
McGee, Thomas D., 3,801,688.

Ipsen Industries International Gesellschaft mit beschrankter Haftung: *See—*
Limque, Ferdinand; and Bertand, Hans Josef, 3,801,079.

Irvine, Gerald D., to Scorpion, Inc. Suspension system. 3,800,897, Cl. 180-5.00r.

Irwin, Carl Francis; and Wolfe, Harry Walter, Jr., to Du Pont de Nemours, E. I., and Company. Flexible polyurethane foam having improved compression set. 3,801,518, Cl. 260-2.5at.

Irwin, Michael G. Igniter. 3,801,260, Cl. 431-128.000.

Ishikawa, Tomio: *See—*
Sano, Yoshiaki; Ishikawa, Tomio; Hirose, Yoshitaka; and Miki, Yasumasa, 3,801,331.

Iso, Mitsuo: *See—*
Goto, Masaru; and Iso, Mitsuo, 3,800,696.

Isurushima, Masaaki: *See—*
Kimoto, Ryuzo; Imaoka, Kazuo; Isurushima, Masaaki; and Umemoto, Kojiro, 3,801,622.

Itel Corporation, mesne: *See—*
Sordello, Frank J.; and Salmond, Kent A., 3,801,969.

Ito, Isao. Windshield wiper for automobile or the like. 3,800,356, Cl. 15-250.340.

ITT Industries, Inc.: *See—*
Gonsior, Franz, 3,800,827.

Ivac Corporation: *See—*
Georgi, Heinz W., 3,800,794.

Iveit, Oyvind, to Patents and Developments A/S. Hydraulic systems. 3,800,831, Cl. 137-625.480.

Jabco, Inc.: *See—*
Gdovichin, George G., 3,801,752.

Jackson, Bryon, Inc.: *See—*
Ham, John E., 3,800,962.

Jackson, Byron, Inc.: *See—*
Barron, Charles D., 3,801,071.

Jackson, Daniel B., to Parker-Hannifin Corporation. Rotary shaft seal. 3,801,113, Cl. 277-134.000.

Jackson, Julius, to Du Pont de Nemours, E. I., and Company. Production of phthalocyanine pigment. 3,801,591, Cl. 260-314.500.

Jackson, Robert G., to Conch International Methane Limited. Integrated tank containers for the bulk storage of liquids. 3,800,970, Cl. 220-9.olg.

Jacob, Ezekiel J. Disposable diaper with semielastic strip fasteners. 3,800,796, Cl. 128-284.000.

Jacobi, Jacob, to Sly-Mark Enterprises. Fishing float device. 3,800,461, Cl. 43-44.880.

Jacobs, James W., to General Motors Corporation. Unitary piston-suction valve assembly. 3,800,675, Cl. 92-74.000.

Jacobsen Manufacturing Company: *See—*
Hoffmeyer, Knud H.; and Wuerker, Charles A., Jr., 3,800,616.

Jaconette, Frank C., Jr.: *See—*
Carissimi, Vincent L.; and Jaconette, Frank C., Jr., 3,801,757.

Jaffe, Paul E., to Pauldan Industries, Inc. Dental floss and method of making same. 3,800,812, Cl. 132-89.000.

Jaggard, Arthur M., to Gould Inc. Assemblying electrodes in electrochemical cells. 3,801,375, Cl. 136-135.00r.

Jakob, Heinz: *See—*
Klement, Heribert; and Jakob, Heinz, 3,800,624.

Jakob, Rolf, to Bayer Aktiengesellschaft. Automatically adjustable expansion nozzle. 3,801,021, Cl. 239-571.000.

Jakobs, Willy: *See—*
Decker, Hanns; Jakobs, Willy; and Stockmann, Helmut, 3,801,026.

James, Edward Anthony: *See—*
Ronen, Ram Shaul; and James, Edward Anthony, 3,801,477.

James, Pierre Lucien Jules, to U.S. Philips Corporation. Cassette holder. 3,801,789, Cl. 250-468.000.

Jamesbury Corporation: *See—*
Miles, Michael E.; and Donnelly, James F., 3,801,066.

Jamshidi, Khosrow. Muscle biopsy device. 3,800,783, Cl. 128-2.00b.

Janchus, Robert M.: *See—*
Huster, Edward, deceased; Janchus, Robert M.; Davis, Steven S.; Davis, Kent L.; and Hawkes, Ralph O., 3,800,953.

Janex, Albert A.: *See—*
Danton, Jacques J.; Janex, Albert A.; and Martin-Garin, Gerard G., 3,801,980.

Janning, John L., to National Cash Register Company, The. Picture producing plasma display device and method of making it. 3,801,852, Cl. 313-220.000.

Janssen, Joannes Franciscus Maria: *See—*
Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus Maria, 3,801,184.

Japan Synthetic Rubber Co., Ltd.: *See—*
Shiratsuchi, Eiichiro; and Tagami, Eijiro, 3,801,523.

Jaros, Frantisek: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; and Slavik, Vlastislav, 3,800,521.

Jarzynski, Michael J., to L & A Products, Inc. Manifold for high pressure washer in mechanical mode selection. 3,801,017, Cl. 239-310.000.

Jaupain, Maurice: *See—*
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,800,983.

Jeal, Harvey Philip: *See—*
Summerlin, Frederick Arthur; and Jeal, Harvey Philip, 3,800,581.

Jeffrey Galion Inc.: *See—*
Munger, Fay E., 3,801,157.

Jendrisak, Joseph E.; and McKelvey, Harold E. Apparatus for seaming the edges of glass sheets. 3,800,477, Cl. 51-139.000.

Jenkins, John P., to International Tapetronics Corporation. Compact cassette tape transport with direct capstan and torque motor drives. 3,801,043, Cl. 242-199.000.

Jennings, Barry Randal; and Baily, Edward Dyson. Apparatus for linear dichroism determination. 3,801,204, Cl. 356-117.000.

Jennings, Ralph Ernest: *See—*
Barth, Gerald Dean; and Jennings, Ralph Ernest, 3,800,653.

Jervis Corporation: *See—*
McIntyre, Matthew, 3,800,619.

Jesevich, John; and Simkus, Vyto, to American Flange & Manufacturing Co., Inc. Method of making container closure construction. 3,800,401, Cl. 29-432.200.

Jet Sew, Inc.: *See—*
Rockerath, John L., 3,800,719.

Jidosha Kiki Kabushiki Kaisha: *See—*
Masjda, Naosuke; and Abe, Toshihiro, 3,801,162.

Jira, Arata, to Toyota Jidosha Kogyo Kabushiki Kaisha. Impact energy absorbing apparatus. 3,801,123, Cl. 280-87.00r.

Jobst Institute, Inc.: *See—*
Tenteris, Ansis U.; and Wetzel, Bruce W., 3,800,342.

Johannes, Robert: *See—*
Eastwood, H. Keith; Johannes, Robert; Griffiths, Clifford H.; and Gavini, Anibal, 3,801,824.

Johansson, Lennart Ragnar; and Tenne, Lave, to Hasselbed, Fritz Victor. Control device for an exposure meter for photographic cameras. 3,800,684, Cl. 354-58.000.

Johns-Mansville Corporation: *See—*
Terry, Rupert Douglas, 3,800,834.

Johns-Manville Corporation: *See—*
Smith, Harvell Morton; and Hengstler, Robert Edward, 3,801,243.

Johnsen, Erich Cornelius. Radiation detection of low pressure in pneumatic tires. 3,801,787, Cl. 250-388.000.

Johnson & Johnson: *See—*
Augsburger, Larry Louis; and Marvel, John Ray, 3,801,709.
Kalwaites, Frank, 3,800,364.
Mays, Alfred Thomas, 3,801,273.
McKnight, James J.; and Goldalian, Jack, Jr., 3,800,792.
Russell, Gordon D., 3,801,675.

Johnson and Johnson: *See—*
Tunc, Deger, 3,800,797.

Johnson, Cecil J.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,801,288.

Johnson, Charles R., to Firestone Tire & Rubber Company, The. Mass polymerization of conjugated dienes with organo lithium catalysts. 3,801,555, Cl. 260-83.700.

Johnson, Everett R.; and Holtzcheiter, Earl W., Jr., to United States of America, Atomic Energy Commission. Fixation of nitrogen to form nitrates. 3,801,484, Cl. 204-157.10h.

Johnson, Harold L., to Deering Milliken Research Corporation. Position sensor for carpet-tufting machines. 3,800,718, Cl. 112-79.00r.

Johnson, Roger W.: *See—*
Curcio, Joseph; Hufstetler, Perry P.; and Johnson, Roger W., 3,801,772.

Johnson, Warren M., to GTE Sylvania Incorporated. Light source with RF interference shield. 3,801,808, Cl. 240-2.100.

Johnson, Wayne E., to Allis-Chalmers Corporation. Dual lever control. 3,800,614, Cl. 74-473.00r.

Johnsson, Bo, to Svenska Rotor Maskiner Aktiebolag. Regenerator bodies for rotary regenerative heat exchangers. 3,800,860, Cl. 165-9.000.

Johnston, James Joseph, to AMP Incorporated. Apparatus for connecting conductors to terminals in a preloaded electrical connector. 3,800,390, Cl. 29-203.00p.

Jones & Laughlin Steel Corporation: *See—*
Mizikar, Eugene A.; and Rehmus, Frederick H., 3,800,856.

Jones, A. William, to Hooker Chemical Corporation. Multi-stream gas chromatographic method and apparatus. 3,800,602, Cl. 73-23.100.

Jones, Alan L.; Judson, George T.; and Kellogg, Robert M., to International Business Machines Corporation. Fluid coupling. 3,801,142, Cl. 285-280.000.

Jones, Bernard H.: *See—*
Sears, James H.; and Jones, Bernard H., 3,801,032.

Jones, Cecil R., to Transfer Systems Incorporated. Failed nuclear reactor fuel detection apparatus. 3,801,441, Cl. 176-19.00r.

Jones, Cecil R., to Transfer Systems Incorporated. Fuel assembly for power generating nuclear reactor. 3,801,453, Cl. 176-78.000.

Jones, Charles Wright; and Stetler, Dwight L., to Xepex Industries, Inc. Apparatus for forming carton. 3,800,677, Cl. 93-36.0da.

Jones, Edward B. Integral control system for sailplanes. 3,801,045, Cl. 244-16.000.

Jones, J. A., Construction Company: *See—*
Hannie, Jack J., 3,800,425.
Haynie, Jack J.; Roland, David H.; and Simpson, Torrence, Jr., 3,801,132.

Jones Jerry L.: *See—*
Stark, Marvin; Jones Jerry L.; Tuck, Richard L., Sr.; and Aquino, Herman A., 3,800,714.

Jones, John J., Jr., to Westerlake, J. H., Corporation. Flowmeter. 3,800,592, Cl. 73-181.000.

Jones, Paul W., to Identicon Corporation. Optical scanning apparatus. 3,801,182, Cl. 350-156.000.

Jones, Peter, to Girling Limited. Master cylinders for hydraulic braking systems. 3,800,538, Cl. 60-562.000.

Jones, Richard L.: *See—*
Afanador, Carlos P.; and Jones, Richard L., 3,801,124.

Jones, Richard M., III. Air supported enclosure for a jogging track. 3,801,093, Cl. 272-3.000.

Jones, Ronald N.: *See—*
Hauser, Hans; and Jones, Ronald N., 3,800,603.

Jonssen, Finn L.; and Trolle, Sten, to AB Carlox. Frame for side gap press and frame structure therefor. 3,800,695, Cl. 100-214.000.

Jonsson, Nils Gunnar. Fluid pressure creating rotary device. 3,801,214, Cl. 415-72.000.

Jordan, William E., to Xerox Corporation. Vacuum holddown device for moving belts. 3,801,092, Cl. 271-197.000.

Joschko, Gunter, to Telefunken Patentverwertungsgesellschaft G.m.b.H. Damping means. 3,801,535, Cl. 260-29.1sb.

Joseph, Robert T., to FMC Corporation. Process for regenerating spent active carbon in a suspension dispersion transport system. 3,801,514, Cl. 252-420.000.

Josephson, Albert; and Fink, Fred S. Swallow diagnostic device. 3,800,782, Cl. 128-2.00s.

Jovic, Nikola Ljotic. Crosspoint switching matrix incorporating solid state thyristor crosspoints. 3,801,749, Cl. 179-18.0gf.

Joyce, Michael F., to North American Philips Corporation. Solid-state relay. 3,801,832, Cl. 307-252.00b.

Joyce, Michael F., to North American Philips Corporation. Pulse generator using bi-lateral solid state breakover device energized by a vice signal. 3,801,893, Cl. 321-43.000.

Judson, George T.: *See—*
Jones, Alan L.; Judson, George T.; and Kellogg, Robert M., 3,801,142.

Juguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, to Institut Francais du Petrole des Carburants et Lubrifiants. Substantially neutral platinum series catalyst. 3,801,516, Cl. 252-466.0pt.

Junghanb, Helmut: *See—*
Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.

Juntgen, Harald: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Juranitch, John R. Blade sharpening guide. 3,800,632, Cl. 76-82.000.

K-Tel International, Inc.: *See—*
Krause, Arthur A., 3,800,957.

Kabel- und Metallwerke Gutehoffnungshuette A.G.: *See—*
Ziemek, Gerhard, 3,800,405.

Kabushiki Kaisha Daini Seikosha: *See—*
Nemoto, Kenji; and Saito, Akira, 3,800,635.

Kabushiki Kaisha Eishin: *See—*
Funakubo, Toshiei, 3,800,633.

Kabushiki Kaisha Suwa Seikosha: *See—*
Yamazaki, Satoshi, 3,800,523.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakayama, Shozo, 3,801,227.

Kabushiki Kaisha Watanabe Tekkosho: *See—*
Nishiyori, Kyutaro; and Okada, Masahiro, 3,800,648.

Kacek, Donald J., to Sundstrand Corporation. Auxiliary hydraulic power supply. 3,800,534, Cl. 60-39.280.

Kacsor, Sandor. Fuel lock. 3,800,821, Cl. 137-384.400.

Kahle, Gerald R.: *See—*

Hogan, John Paul; Kitchen, Alonzo G.; and Kahle, Gerald R., 3,801,520.
Kahling, Joachim: *See*—
Seeger, Ernst; Kahling, Joachim; and Encel, Wolfhard, 3,801,592.
Kaji, Tetsunori: *See*—
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.
Kajiyama, Yuji: *See*—
Akiyama, Katsuhiko; and Kajiyama, Yuji, 3,801,388.
Kalisch, Alfons A.: *See*—
Griese, Alfons; Kalisch, Alfons A.; and Luz, Hans G., 3,801,877.
Kallander, John E. Head load balancer for bookbinders and other objects. 3,800,989, Cl. 224-5.00r.
Kalwaites, Frank, to Johnson & Johnson. Apparatus (discontinuous imperforate portions on backing means of closed sandwich). 3,800,364, Cl. 19-161.00p.
Kaman Aerospace Corporation: *See*—
Stone, Walter N., 3,801,050.
Kamei, Tatsuya; Ogawa, Takuzo; Kodera, Hiroshi; and Kanda, Yozo, to Hitachi, Ltd. Multi-layer semi-conductor device to be turned on by a stress applied thereto. 3,801,885, Cl. 317-235.00r.
Kamijo, Hirotaka: *See*—
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,801,456.
Kamimori, Tadatoshi: *See*—
Furuuchi, Shigemasa; Nishihara, Akira; Okajima, Yasunaru; and Kamimori, Tadatoshi, 3,801,352.
Kamitsu Seisakusho Ltd.: *See*—
Tsukuma, Shin; and Kobayashi, Kunito, 3,801,034.
Kamiyama, Kenji: *See*—
Sato, Kazuo; Kamiyama, Kenji; and Tahara, Koichi, 3,801,471.
Kamp, Heinz; and Gith, Walter. Method and apparatus for monitoring throw-off loop formation on the yarn guiding drum of coil winding machines. 3,801,031, Cl. 242-36.000.
Kanao, Seizo: *See*—
Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,801,633.
Kanarr, George W. Necktie storage device. 3,801,174, Cl. 312-136.000.
Kanda, Yozo: *See*—
Kamei, Tatsuya; Ogawa, Takuzo; Kodera, Hiroshi; and Kanda, Yozo, 3,801,885.
Kane, Thomas J.: *See*—
Nikolits, Ronald F.; and Kane, Thomas J., 3,800,369.
Kanngiesser, Karl-Werner, to Aktiengesellschaft Brown, Boveri & Cie. Method for controlling HVDC transmission system to avoid line frequency overvoltage upon load dumping. 3,801,895, Cl. 321-27.00r.
Kant, Michel, to Agence Nationale de Valorisation de la Recherche Anvar. Method and apparatus for regulating the speed of an asynchronous electromagnetic machine having an open magnetic circuit. 3,801,840, Cl. 310-13.000.
Kantor, Sidney: *See*—
Diehl, Robert Eugene; Schrider, Michael Stanley; and Kantor, Sidney, 3,801,630.
Kaplan, Stanley D. Locking mechanism. 3,800,570, Cl. 70-18.000.
Kardel Products Corporation: *See*—
Knapp, Karl K.; and Reedy, Delbert R., 3,800,554.
Karkowski, Abdon; Nowak, Edmund; and Szromba, Roman, to Instytut Przemyslu Wiazacych Materialow. Process for the Production of lightweight expanded aggregate. 3,801,262, Cl. 423-13.000.
Karlen, Harvey R.; Eberstein, Ralph; and Herbsthofer, Franz L., to Cory Corporation. One-piece spout and handle structure. 3,800,988, Cl. 222-465.000.
Kasano, Hiroyuki: *See*—
Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, 3,801,509.
Kasselmann, John T., to Bendix Corporation, The. Solenoid operated servomotor. 3,800,666, Cl. 91-376.000.
Katayama Takao: *See*—
Otsuka, Katsuhiko; and Katayama Takao, 3,800,686.
Katchka, Jay R., to Robertshaw Controls Company. Method of calibrating dual level mechanism. 3,800,393, Cl. 29-407.000.
Kates, W. A., Company, The: *See*—
Kates, Willard A., 3,801,073.
Kates, Willard A., to Kates, W. A., Company, The. Fluid mixer. 3,801,073, Cl. 259-4.000.
Kato, Hidemasa; Inoue, Kiyoshi; and Imai, Munemaro, to Hitachi, Ltd. Device for detecting the overheating of fuel elements for a nuclear reactor. 3,801,439, Cl. 176-19.00r.
Kato, Tadashi, to Ricoh Co., Ltd. Apparatus for the production of recording electrodes of the multiple needle type. 3,801,057, Cl. 249-83.000.
Katoh, Jun: *See*—
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.
Katscher, Werner: *See*—
Barthels, Heinz; Fassbender, Josef; and Katscher, Werner, 3,801,450.
Katter, Lincoln E.; and Galbraith, Lyle D., to Rocket Research Corporation. Crash restraint aspirating inflation system with canted nozzles. 3,801,127, Cl. 280-150.0ab.
Katzaman, Ronald Eugene: *See*—
Shultz, Edmund Franklin, Jr.; and Katzaman, Ronald Eugene, 3,800,416.
Kauczor, Hans-Werner: *See*—
Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.
Kautex-Werk Reinold Hagen: *See*—
Godtner, Albert, 3,801,254.
Kawabe, Ushio; Kudo, Mitsuhiro; and Fukase, Shigeo, to Hitachi, Ltd. NB_3Ga base superconducting materials. 3,801,313, Cl. 75-174.000.
Kawasaki, Harumi, to Asaki Kogaku Kogyo Kabushiki Kaisha. Gas laser apparatus having two temperatures sensitivity. 3,801,929, Cl. 331-94.500.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Okuno, Ryuzo; and Fujii, Hiroo, 3,801,267.
Kaye, Robert Lee. Image projection system with filmstrip cassette. 3,801,199, Cl. 353-74.000.
Kayford Manufacturing Company Limited: *See*—
Tanner, David J., 3,801,292.
Keating, Francis J. Portable blade sharpener. 3,800,480, Cl. 51-249.000.
Keeler, Miner S., II. Jib downhaul. 3,800,729, Cl. 114-106.000.
Keith, Charles H.: *See*—
Levers, William E.; and Keith, Charles H., 3,800,676.
Keleshian, John V., to Aetna Bearing Company. Bearing structure and method of forming same. 3,800,384, Cl. 29-148.40a.
Keller, Guenter; and Olderdissen, Ulrich, to International Business Machines Corporation. Write suppression in bipolar transistor memory cells. 3,801,965, Cl. 340-173.00r.
Keller, James Paul, to Renshaw, John L., Inc. Pre-insulated pipe conduit with test passage. 3,801,140, Cl. 285-47.000.
Keller, Laszio: *See*—
Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszio, 3,801,578.
Keller, Peter, to Glasurit-Werke M. Winkelmann A.G. Covering. 3,801,347, Cl. 117-17.000.
Keller, Richard E. Method and apparatus for the control of self-propelled apparatus. 3,800,902, Cl. 180-79.100.
Kellogg, Robert M.: *See*—
Jones, Alan L.; Judson, George T.; and Kellogg, Robert M., 3,801,142.
Kelly, Joe T.; deceased (by Kelly, LaVerne S.; executrix); and Poettmann, Fred H., to Marathon Oil Company. Situ recovery of oil from tar sands using oil-external micellar dispersions. 3,800,873, Cl. 166-272.000.
Kelly, LaVerne S.: *See*—
Kelly, Joe T.; and Poettmann, Fred H., 3,800,873.
Kelsey-Hayer Company: *See*—
Good, William E.; and Davies, Arthur S., 3,800,997.
Kelsey-Hayes Company: *See*—
Chapin, Gordon C., 3,800,600.
Kemlite Corporation: *See*—
Morse, Donald B.; and Pribish, Bernard A., 3,800,647.
Kemmerer, Wayne J.; Dicola, Vincent C.; and Raddatz, Gene R., to Thomas Industries, Inc. Track light system. 3,801,951, Cl. 339-21.00r.
Kemmetmueller, Roland, to American Waagner-Biro Company, Inc. Method of drying coal. 3,800,427, Cl. 34-10.000.
Kemmetmueller, Roland. Apparatus for smokeless pushing and transportation of hot coke. 3,801,472, Cl. 202-263.000.
Kemp, Charles E., to Clorox Company, The. Automatic dispenser closure. 3,800,987, Cl. 222-153.000.
Kemper, Kate. Dough treating and tray loading machines. 3,800,495, Cl. 53-52.000.
Kendall Company, The: *See*—
Collins, Robert F., 3,800,790.
McWhorter, Daniel M., 3,800,799.
Kenics Corporation: *See*—
Grout, Kenneth M.; and Devellian, Richard D., 3,800,985.
Kennametal Inc.: *See*—
Eversole, William C., 3,801,213.
Kennedy, James C., Jr.: *See*—
Duncanson, William T.; and Kennedy, James C., Jr., 3,800,909.
Kennedy, Sterling R. Method of purifying water. 3,801,501, Cl. 210-59.000.
Kennon, Richard D.: *See*—
Grove, Louis C., Jr.; Harder, John E.; Kennon, Richard D.; and Santilli, James N., 3,801,870.
Kern, Loyd R., to Atlantic Richfield Company. High pressure gas-carbonated water miscible displacement process. 3,800,874, Cl. 166-274.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Barthels, Heinz; Fassbender, Josef; and Katscher, Werner, 3,801,450.
Keser, Fridolin; and Urban, Ralf, to Werner & Pfleiderer. Device for gravimetrically uniformly feeding of components to a mixing device. 3,800,894, Cl. 177-64.000.
Keystone Industries, Inc.: *See*—
Hawthorne, Vaughn T., 3,800,961.
Khambatta, Sarosh M.; and Asimor, Brian L., 1/3 to Orozco, Enrique H. Method of making a trunnion and bearing body assembly for a universal joint. 3,800,383, Cl. 29-148.40a.
Khuntia, Natabara, to General Motors Corporation. Track chain seal. 3,801,163, Cl. 305-11.000.

Kiehl, Paul G., to Visual Data Corporation. Mailing viewer for slides and the like. 3,800,452, Cl. 40-63.00a.

Kiehn, Mogens. Combination mast and light raising and lowering apparatus. 3,801,813, Cl. 240-64.000.

Kikkoman Shoyu Co., Ltd.: *See*—
Okuhara, Akira; Nakajima, Takashi; and Saito, Nobuo, 3,801,488.

Kikuchi, Tom T., to General Motors Corporation. High intensity radiation source. 3,801,926, Cl. 331-94.500.

Kilayko, Enrique Locsin, to Precision Control Products Corporation. Diaphragm pump. 3,801,232, Cl. 417-413.000.

Kimata, Ryuzo: *See*—
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.

Kimoto, Ryuzo; Imaoka, Kazuo; Isurushima, Masaaki; and Umemoto, Kojiro, to Takeda Chemical Industries, Ltd. Process for purification of alpha-unsaturated nitriles. 3,801,622, Cl. 260-465.900.

King, Arthur S. Method and apparatus for flocculation of dissolved substances. 3,801,482, Cl. 204-152.000.

King, Arthur S. Apparatus for electrically treating liquids. 3,801,492, Cl. 204-302.000.

King, John M.: *See*—
Hendrickson, Yngve Gust, and King, John M., 3,801,507.

King, Kenneth Gordon, to Westinghouse Brake and Signal Company Limited, The. Fail-safe lamp filament monitoring circuit. 3,801,860, Cl. 315-136.000.

King, Neil M.: *See*—
Hookim, Young; and King, Neil M., 3,801,972.

Kingsbury, John P.: *See*—
Barrett, Cedric A.; and Kingsbury, John P., 3,801,147.

Kirch, William: *See*—
Krekeler, Jerome H.; Kirch, William; and Aboutboul, Henri A., 3,801,705.

Kirk, Bradley S.: *See*—
Shattes, Walter J.; Marancik, William G.; and Kirk, Bradley S., 3,800,414.

Kiser, Fred W., to Timesavers, Inc. Method of machining ferromagnetic workpieces to true flatness. 3,801,293, Cl. 51-326.000.

Kist, Karl E.; and Elmore, Donald F., to Harris-Intertype Corporation. Disconnect arrangment for multi-unit printing press. 3,800,698, Cl. 101-137.000.

Kistler, Walter P., to Sundstrand Data Control, Inc. Piezoelectric pressure transducer. 3,801,838, Cl. 310-8.700.

Kiszel, Janos; and Papp, Laszlo, to Medicor Muvek. Medical instrument for examining a foetus during delivery. 3,800,784, Cl. 128-206.00e.

Kitaj, Walter, to Owens-Illinois, Inc. Coated glass surface. 3,801,361, Cl. 117-124.00b.

Kitamura, Ryuzo, to Tokyo Gas Co. Ltd. I-shape duct. 3,800,685, Cl. 98-32.000.

Kitano, Akira, to Nippondenso Co., Ltd. Lamp failure detecting system. 3,801,975, Cl. 340-251.000.

Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, to Nippon Selfoc Kabushiki Kaisha. Gradient index light conductor. 3,801,181, Cl. 350-96.00r.

Kitchen, Alonzo G.: *See*—
Hogan, John Paul; Kitchen, Alonzo G.; and Kahle, Gerald R., 3,801,520.

Kiwalle, Jozef: *See*—
Fuller, Francis W.; and Kiwalle, Jozef, 3,800,996.

Kjellberg, Bent Ivan: *See*—
Kjellberg, Finn Andre; Lemvig, Svend Edvard Nielsen; and Kjellberg, Bent Ivan, 3,800,916.

Kjellberg, Finn Andre; Lemvig, Svend Edvard Nielsen; and Kjellberg, Bent Ivan, to Trioteam A/S. Locking mechanism for sets of castors supporting apparatuses, machines, or furniture. 3,800,916, Cl. 188-1.00d.

Klaiber, Erich; Stockle, Hans; and Domann, Helmut, to Bosch, Robert, G.m.b.H. Speed regulating arrangement for internal combustion engines. 3,800,755, Cl. 123-102.000.

Kleine, Eugene T. Window box planter. 3,800,470, Cl. 47-36.000.

Kleinhagauer, Otmar: *See*—
Holzgruber, Wolfgang; Machner, Peter; Kleinhagauer, Otmar; and Matzer, Josef, 3,801,153.

Klement, Heribert; and Jakob, Heinz. Windshield wiper particularly for automotive vehicles. 3,800,624, Cl. 74-600.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Decker, Hanns; Jakobs, Willy; and Stockmann, Helmut, 3,801,026.

Kloth, James Albert: *See*—
Edwards, Joseph R., Sr.; and Kloth, James Albert, 3,800,584.

Klundt, Irwin L.: *See*—
Biel, John Hans; and Klundt, Irwin L., 3,801,624.

Klutchko, Sylvester: *See*—
Von Strandtmann, Maxmilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,801,644.

Knapp, Karl K.; and Reedy, Delbert R., to Kardel Products Corporation. Food storage and cooling apparatus. 3,800,554, Cl. 62-384.000.

Knapp, Lowell W.; and Rebres, Robert P., to Xerox Corporation. Toner concentration regulating apparatus. 3,801,196, Cl. 355-3.000.

Knappstein, Johannes; Thiersch, Friedrich; and Schuch, Werner, to Still, Carl, Firma. Heating arrangement for regenerative coke oven batteries heated with rich gas or lean gas. 3,801,470, Cl. 202-142.000.

Knarreborg, Otto H. Spring-operated door silencer. 3,800,360, Cl. 16-83.000.

Knee, Gerald John. Rotary internal combustion engine. 3,800,760, Cl. 123-8.090.

Knell, Bernhard; and Bruderer, Werner, to Concast AG. Method of introducing the dummy bar into a continuous casting mold and apparatus for the performace of the aforesaid method. 3,800,849, Cl. 164-82.000.

Knifton, John F., to Texaco Inc. Process for reducing nitrosubstrates to corresponding amines by use of homogeneous nickel catalysts in the presence of hydrogen and carbon monoxide. 3,801,640, Cl. 260-563.00d.

Knight, Bruce L., to Marathon Oil Company. Process of flooding oil-bearing formations using aldehydes as oxygen scavengers in polymer solutions. 3,800,877, Cl. 166-305.00r.

Knight, John W., IV; and Savage, Carl M., Jr., to General Motors Corporation. Occupant restraint system. 3,801,126, Cl. 280-150.0ab.

Knipp, Ullrich: *See*—
Schrewe, Klaus; Knipp, Ullrich; and Ravasz, Akos, 3,801,684.

Knoblauch, Karl: *See*—
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Knorr, Eberhard: *See*—
Mantey, Paul Gerhard; and Knorr, Eberhard, 3,801,083.

Knox, George P.; and Cutler, Gene C. Dehydrogenation of alkylated aromatic hydrocarbons. 3,801,663, Cl. 260-669.00r.

Kobald, Walter, to Bosch, Robert, GmbH. Clearance adjusting arrangement for an axial piston machine. 3,800,672, Cl. 91-487.000.

Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Yarn winding process and machine adapted for carrying out same. 3,801,030, Cl. 242-18.00r.

Kobayashi, Akiyoshi; and Miyagawa, Kiyoshi, to Toyoda Koki Kabushiki Kaisha. Manual dressing apparatus. 3,800,776, Cl. 125-111.0at.

Kobayashi, Hideo: *See*—
Ozawa, Goro; Kosaka, Kenzo; Kobayashi, Hideo; Adachi, Kiyoshi; and Okaya, Tsutomu, 3,800,374.

Kobayashi, Kunito: *See*—
Tsukuma, Shin; and Kobayashi, Kunito, 3,801,034.

Kobayashi, Masamitsu; and Takahashi, Mitsuano, to Teikoku Kako Company Limited. Aluminum phosphate and a producing method therefor. 3,801,704, Cl. 423-309.000.

Kobylinski, Thaddeus P.; and Taylor, Brian W., to Gulf Research & Development Company. Process for reducing the content of nitrogen oxides in the exhaust gases from internal combustion engines. 3,801,697, Cl. 423-213.700.

Kocha Adler AG: *See*—
Bartelheimer, Ehrhard, 3,800,679.

Kodama, Tsutomu: *See*—
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Hirano, Hiroshi, 3,801,683.

Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Hirano, Hiroshi, to Toyama Chemical Co. Ltd. Process for preparing trialkyophosphate. 3,801,683, Cl. 260-973.000.

Kodera, Hiroshi: *See*—
Kamei, Tatsuya; Ogawa, Takuzo; Kodera, Hiroshi; and Kanda, Yozo, 3,801,885.

Koehring Company: *See*—
Mistarz, Robert J.; and Mojonnier, Albert B., 3,800,400.

Kogen Industries, Inc.: *See*—
Kopas, Peter P., 3,801,068.

Kohashi, Takahiro: *See*—
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.

Koivunen, Erkki A., to General Motors Corporation. Transversely mounted engine driven transmission. 3,800,626, Cl. 74-695.000.

Koizumi, Ken: *See*—
Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, 3,801,181.

Kojima, Kunio; Shimada, Kazuyuki; and Wada, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Method for making printed circuits which include printed resistors. 3,801,364, Cl. 117-212.000.

Kolomayets, George; and Reed, Martin C., to Warwick Electronics Inc. Record changer. 3,801,109, Cl. 274-10.00r.

Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, to Takasago Perfumery Co., Ltd. Process for the production of squalene-type hydrocarbons. 3,801,668, Cl. 260-677.00r.

Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, to Daikin Kogyo Co., Ltd. Polymerization process for preparing fluoroelastomer. 3,801,552, Cl. 260-80.770.

Komiya, Takao: *See*—
Tanaka, Hiroshi; and Komiya, Takao, 3,801,317.

Komura, Yasuyuki; Hirata, Shinichi; Fukushima, Takashi; and Ogawa, Mutsuo, to Ricoh Co., Ltd. Video signal compression and expansion system and devices therefor. 3,801,737, Cl. 178-6.000.

Komure, Shigeyuki: *See*—
Yamaguchi, Hiroyuki; and Komure, Shigeyuki, 3,801,553.

Koninklijke Nederlandsche Gist-En Spiritus-Fabriek N.V.: *See*—
Eygermans, Petrus Johannes, 3,801,463.

Konrad, Charles E., to General Electric Company. Synchronization scheme. 3,801,796, Cl. 307-87.000.

Kopas, Peter P., to Kogen Industries, Inc. Automatic folding landing gear. 3,801,068, Cl. 254-86.00r.

Koppers Company, Inc.: *See*—
Quintilian, Bartholomew Frank, 3,800,404.
Williams, Charles H., 3,801,253.

Korbacher, Werner: *See*—
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Korbonits, Dezso: *See*—
Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszlo, 3,801,578.

Korn, Jonathan A. Credit card identification device. 3,801,823, Cl. 250-221.000.

Korner, Renzo L., to Westinghouse Electric Corporation. Electrical penetration assembly. 3,801,722, Cl. 174-11.00r.

Korte, Richard M., to General Electric Company. Electric circuit breaker or the magnetic blowout type. 3,801,760, Cl. 200-144.00c.

Kosa, Yasunobu: *See*—
Yamada, Eiichi; Kosa, Yasunobu; and Sato, Eiichiro, 3,801,383.

Kosaka, Kenzo: *See*—
Ozawa, Goro; Kosaka, Kenzo; Kobayashi, Hideo; Adachi, Kiyoshi; and Okaya, Tsutomu, 3,800,374.

Kosaka, Takeshi; and Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Color reproduction method in a halftone dot. 3,801,736, Cl. 178-5.20a.

Kosecoff, Irving W. Wheelchair carrier attachable to vehicle. 3,800,967, Cl. 214-450.000.

Koshin Sumitsukikai Kabushiki Kaisha: *See*—
Niino, Kumao, 3,800,720.

Kossmann, Hans, to American Can Company. Apparatus and method for electrodepositing a coating on interior surfaces of container bodies. 3,801,485, Cl. 204-181.000.

Kostas, James M.: *See*—
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.

Kotzin, Bernard, Jr. Roller structures with thread guards. 3,801,129, Cl. 280-158.00r.

Kovach, Leslie J. Dental cleaning and massaging device. 3,800,786, Cl. 128-66.000.

Krabetz, Richard; Willersinn, Carl-Heinz; Engelbach, Heinz; Wistuba, Hermann; Lebert, Ulrich; and Frey, Walter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of acrylic acid. 3,801,634, Cl. 260-533.00n.

Kraemer, Wieland, to Aktiebolaget Atomenergi. Pressure vessel in particular for a nuclear reactor. 3,801,444, Cl. 176-37.000.

Kraft, Nathan: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Kraftwerk Union Aktiengesellschaft: *See*—
Goebel, Konrad, 3,801,793.
Kumpf, Hermann, 3,801,454.

Krause, Arthur A., to K-Tel International, Inc. Combination dish rack and tray. 3,800,957, Cl. 211-41.000.

Kreckl, Alois: *See*—
Gorlach, Helmut; Stroot, Walter; and Kreckl, Alois, 3,801,422.

Krekeler, Jerome H.; Kirch, William; and Aboutboul, Henri A., to National Petro Chemicals Corporation. Preparation of silica gels. 3,801,705, Cl. 423-338.000.

Kretssler, Ralph T., to Sundstrand Corporation. Adjustment mechanism for torque transmitting and load limiting device. 3,800,922, Cl. 188-134.000.

Kreuter, Kenneth G.; and Mueller, Klaus P., to Robertshaw Controls Company. Condition responsive para-meter control means. 3,801,006, Cl. 236-1.00c.

Krieg, Martin, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for reducing losses of mercury in the alkali metal chloride electrolysis according to the amalgamation process. 3,801,480, Cl. 204-99.000.

Kroes, Willem Jacobus, to Stichling Revalidatie Research Schiedam. Page turning device. 3,800,453, Cl. 40-104.00a.

Krohn, Henry W., to Eaton Corporation. Pressure change indicator. 3,800,736, Cl. 116-70.000.

Krolla, Hans-Georg: *See*—
Mulfinger, Hans-Otto; Dutz, Hubert; and Krolla, Hans-Georg, 3,801,356.

Krom, Lynn C.; and Milton, Thomas J., to General Motors Corporation. Key indicating switch. 3,801,756, Cl. 200-44.000.

Krouskop, Ned C.: *See*—
Castellucci, Nicholas T.; and Krouskop, Ned C., 3,801,474.

Krug, John A. K., Jr., to ACF Industries, Incorporated. Railroad car for transporting containers. 3,800,712, Cl. 105-366.00d.

Kruka, Vitold R.: *See*—
Meier, Dale J.; and Kruka, Vitold R., 3,801,508.

Kubitz, Wayne H. Apparatus for cutting and shredding wood. 3,801,027, Cl. 241-225.000.

Kubo, Isao; and Shiseki, Nobuo, to Fujikura Cable Works, Limited, The. Structure of the terminal portion of a cable. 3,801,723, Cl. 174-15.0bh.

Kubo, Masayoshi; and Horikawa, Takeshi, to Daicel Ltd. Process for producing pyridine carboxylic acids. 3,801,584, Cl. 260-295.000.

Kubodera, Hisayoshi. Drying and curing apparatus. 3,800,433, Cl. 34-155.000.

Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, to Ajinomoto Co., Inc. Method for producing L-arginine by fermentation. 3,801,456, Cl. 195-28.00r.

Kucherenko, Pavel Petrovich: *See*—
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850

Kudo, Mitsuhiro: *See*—
Kawabe, Ushio; Kudo, Mitsuhiro; and Fukase, Shigeo, 3,801,313.

Kuehn, Erich, to Atlas Chemical Industries, Inc. Flame retardant and intumescent compositions. 3,801,333, Cl. 106-15.0fp.

Kuhlmann, Robert E.: *See*—
Youngblood, Douglas J.; Kuhlmann, Robert E.; and Pratt, Roy E., 3,801,493.

Kuhne, Gunter: *See*—
Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.

Kuiper, Christiaan, to Van Doorne's Aanhangwagenfabriek N.V. Armoured vehicle. 3,800,659, Cl. 89-40.00b.

Kulick, Andrew: *See*—
Heiser, E. Franklin; and Kulick, Andrew, 3,801,948.

Kumano, Hiroshi: *See*—
Nishino, Atsushi; Kumano, Hiroshi; and Hayakawa, Hayashi, 3,801,479.

Kumpf, Hermann, to Kraftwerk Union Aktiengesellschaft. Pressure-proof connection for nuclear reactor pressure vessels. 3,801,454, Cl. 176-87.000.

Kung, Andrew H.: *See*—
Harris, Stephen F.; and Kung, Andrew H., 3,801,797.

Kunzel, Hans Egon; Blankenstein, Gunter; Bentz, Francis; and Nischk, Gunther, to Bayer Aktiengesellschaft. Soluble aromatic polyamides and filaments with a high modulus of elasticity produced from them. 3,801,545, Cl. 260-47.0cz.

Kurapov, Jury Anatolievich: *See*—
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850

Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, to Hitachi, Ltd. Injection type quaternary compound light emitting diode. 3,801,509, Cl. 252-62.36a.

Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, to Furukawa Electric Co., Ltd., The. Snow-resistant conductor. 3,801,726, Cl. 174-40.00r.

Kuring, mesne: *See*—
Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., 3,801,408.

Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., to Kuring, mesne. System for making color-coded index tabs. 3,801,408, Cl. 156-552.000.

Kurkov, Victor P.; Lapporte, Seymour J.; and Toland, William G., to Chevron Research Company. Alpha-acyloxyacetic acid production. 3,801,627, Cl. 260-494.000.

Kurz, John C. Fire damper duct adaptor. 3,800,846, Cl. 160-35.000.

Kusumoto, Hazime: *See*—
Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, 3,801,509.

Kutler, Gerald; and Easwaran, Jairaj, to N L Industries, Inc. Porous refractory body impregnated with magnesium. 3,801,303, Cl. 75-58.000.

Kvam, Donald C.: *See*—
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,801,588.

Kyritsis, William T.; and Simmonds, Robert C., Jr., to USM Corporation. Method of injection molding articles of foam material. 3,801,686, Cl. 264-51.000.

Kysor Industrial Corporation: *See*—
Babb, John H., Jr.; and Maurits, Orville C., 3,800,573.

L & A Products, Inc.: *See*—
Jarzynski, Michael J., 3,801,017.

La Boda, John Albert, to Advance Manufacturing Corporation. Machine for making twisted wire beads for tires. 3,801,028, Cl. 242-4.0be.

La Haye, Paul G.: *See*—
Flitner, David P.; La Haye, Paul G.; and Neugebauer, Franz J., 3,800,861.

La Vallee, Raymond F., to Allis-Chalmers Corporation. Dual hydraulic filter arrangement. 3,800,948, Cl. 210-136.000.

La Vista, Edward G. Push button lid for beverage cans and the like. 3,800,971, Cl. 220-24.00r.

La-Z-Boy Chair Company: *See*—

Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., 3,801,122.

Labofina S.A.: *See—*
Aga, Rene Leon; and Debus, Henri Robert, 3,801,629.

Labombarde, Raymond A. Method for folding of tabs in a right angle transfer zone. 3,800,680, Cl. 93-49.00m.

Lademann, Rudolf; Weisenberger, Karl; and Metzger, Adolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the continuous production of the disodium salt of m-benzenedisulfonic acid. 3,801,632, Cl. 260-505.00n.

Lagnsam, Michael, to Air Products and Chemicals, Inc. Vinyl chloride based polymers manufactured by initiators prepared in-situ. 3,801,556, Cl. 260-87.100.

Lai, Chi Sun, to Motorola, Inc. Analog to pulse width converter. 3,801,834, Cl. 307-265.000.

Lair, John C. Tennis racquet. 3,801,099, Cl. 273-73.00c.

Laitram Corporation, The: *See—*
Lapeyre, James M., 3,800,363.

Lamberson, Jack L. Educational apparatus. 3,800,437, Cl. 35-9.00b.

Lambert, Michael; Neuzy, Hubert; and Brichard, Claude, to Glaverbel S.A. Sheet glass drawing. 3,801,296, Cl. 65-95.000.

Lambiris, Theodore, to General Motors Corporation. Shift indicator arrangement. 3,800,737, Cl. 116-124.00r.

Lamensdorf, David: *See—*
Ross, Gerald F.; Delorenzo, Joseph D.; and Lamensdorf, David, 3,801,976.

Lamond, Lee T., to Celanese Corporation. Separating assembly. 3,800,510, Cl. 55-158.000.

Lampcov, Harold, to Star Filter Company. Coffee filter and method of making same. 3,800,954, Cl. 210-497.000.

Lamprecht, Rudolf; and Reck, Lothar. Headlamp wiper system. 3,800,355, Cl. 15-250.220.

Lamy, Michel; and Vallet, Michel, to Thomson-CSF. Waveguide assembly. 3,801,939, Cl. 333-95.00r.

Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., to Polaroid Corporation. Color diffusion transfer photographic products and processes elitfor sulfur free silber halide solvents. 3,801,318, Cl. 96-3.000.

Lang, Gerard. Process for preparing 3-alkoxy 5-methyl phthalic anhydrides. 3,801,604, Cl. 260-346.600.

Langecker, Erhard. Method for applying labels or plates to hollow bodies of thermoplastic synthetic substance produced by the blow moulding process. 3,801,689, Cl. 264-94.000.

Langenberg, Rolf: *See—*
Meisenburg, Ewald; and Langenberg, Rolf, 3,801,285.

Langendorf Watch Company: *See—*
Breiter, Fritz, 3,800,579.

Langsam, Michael, to Air Products and Chemicals, Inc. In-situ initiation of vinyl chloride polymers with sulfonyl peroxides. 3,801,557, Cl. 260-87.100.

Lapeyre, James M., to Laitram Corporation, The. Tuna butchering method and system. 3,800,363, Cl. 17-52.000.

Lappin, Frank S.; deceased (by Lappin, Thomas F.; and Lappin, Robert W.; executors). Anti-air pollution device. 3,800,513, Cl. 55-238.000.

Lappin, Robert W.: *See—*
Lappin, Frank S., 3,800,513.

Lappin, Thomas F.: *See—*
Lappin, Frank S., 3,800,513.

Lapporte, Seymour J.: *See—*
Kurkov, Victor P.; Lapporte, Seymour J.; and Toland, William G., 3,801,627.

Larrabee, Robert Dean, to RCA Corporation. Thermal detector and method of making the same. 3,801,949, Cl. 338-22.00r.

Larson, Allen E., to Atlantic Richfield Company. Pattern wax composition. 3,801,335, Cl. 106-38.800.

Larson, Bernard J., to Eaton Corporation. Controller for fluid operated device. 3,801,239, Cl. 418-61.00b.

Larson, Charles O., to Larson, Chas. O., Co. Drive fastener device. 3,800,654, Cl. 85-49.000.

Larson, Chas. O., Co.: *See—*
Larson, Charles O., 3,800,654.

Larson, Donald J.: *See—*
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,800,670.

Larson, Rodney L.; and Petersen, Niel R., to MIS Systems Corporation. Multiple axis control system for vibration test apparatus. 3,800,588, Cl. 73-71.600.

Larson, Victor E. Holder for sheet like materials. 3,801,139, Cl. 281-45.000.

Lau, John F., Jr.; and Swedberg, Gordon E., to T. O. Plastics, Inc. Flower pot. 3,800,469, Cl. 47-34.000.

Laugherty Incorporated: *See—*
Laugherty, Lorene; and Laugherty, James R., 3,800,450.

Laugherty, James R.: *See—*
Laugherty, Lorene; and Laugherty, James R., 3,800,450.

Laugherty, Lorene; and Laugherty, James R., to Laugherty Incorporated. Identification band. 3,800,450, Cl. 40-21.00c.

Laute, Wilmar. Christmas tree stand or the like. 3,801,053, Cl. 248-44.000.

Law, Andrew B.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 3,801,575.

Lawlop, Robert E., to Electro-Clamp Corporation. Cable clamp with locking means. 3,801,952, Cl. 339-266.00r.

Lawson, Peter, to Optasound Corporation. Tape and film editing means. 3,801,191, Cl. 351-12.000.

Le Marchand, Alain, to Societe Anonyme D.B.A. Tandem master cylinder. 3,800,539, Cl. 60-562.000.

Le Page, Jean Francois: *See—*
Juguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,801,516.

Leach, Raymond B., to Hill City Mfg., Inc. Wheel hub with floating brake band and floating axle. 3,800,919, Cl. 188-26.000.

Leary, Joseph A.: *See—*
Nance, Robert L.; Leary, Joseph A.; and Mullins, Lawrence J., 3,801,700.

Leas Brothers Development Corporation: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,801,288.

Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., to Leas Brothers Development Corporation. Gasification reactor. 3,801,288, Cl. 23-288.00r.

Leas, Robert L.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,801,288.

Lebert, Ulrich: *See—*
Krabetz, Richard; Willersinn, Carl-Heinz; Engelbach, Heinz; Wistuba, Hermann; Lebert, Ulrich; and Frey, Walter, 3,801,634.

Leblond, Jean; and Biet, Jean, to Uniroyal Englebert France S.A. Transfer apparatus. 3,800,605, Cl. 74-89.000.

Lebrun, Robert. Magnetic hockey game. 3,801,100, Cl. 273-85.00f.

Lee, Alex Y.: *See—*
Gershberg, David N.; and Lee, Alex Y., 3,801,978.

Lee, James Y., to Burroughs Corporation. Self-regulated drive apparatus for display systems. 3,801,863, Cl. 315-169.0tv.

Lee, Raymond, Organization, Inc., The: *See—*
Thornhill, Jan Pass, 3,800,446.

Lee, Robert Arthur; and Bazarian, Albert, Jr., to RCA Corporation. Method of making a directly-heated cathode. 3,800,378, Cl. 29-25.180.

Lefevre, Paul Eshelman, to GTE Sylvania Incorporated. Control circuitry for remote tuning system. 3,801,897, Cl. 334-8.000.

Leidgen, George W.: *See—*
Sullivan, Patrick R.; Leidgen, George W.; and Hubbell, James C., 3,800,753.

Leifeld, Ferdinand: *See—*
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,800,568.

Leister, Heinrich: *See—*
Bien, Hans-Samuel; Hohmann, Walter; Vollman, Geinrich; and Leister, Heinrich, 3,801,606.

Leitgeb, Wilhelm, to Siemens Aktiengesellschaft. Pulse generator for a brushless direct-current rotor excited electrical machine having rotor mounted thyristors. 3,801,833, Cl. 318-254.000.

L'Electronique Medicale S.E.R.D.A.L.S.A.: *See—*
Gaillard, Robert Maurice Georges, 3,800,801.

Lemaire, Bernard J., to Ressorts du Nord S.A. Radiant burner and furnace for treating at high temperature. 3,801,080, Cl. 266-51.00r.

Lemelson, Jerome H. Method of making an electrical circuit. 3,801,366, Cl. 117-212.000.

Lemmens, Jan C., to Stamicarbon N.V. Preparation of granular aggregate for use in concrete objects and structures. 3,801,343, Cl. 106-288.00b.

Lemoff, Theodore C., to Procter & Gamble Company, The. Spray-dried detergent composition. 3,801,511, Cl. 252-135.000.

Lemson, Paul H.: *See—*
Delatorre, Leroy C.; Rapson, William J., Jr.; and Lemson, Paul H., 3,800,586.

Lemvig, Svend Edvard Nielsen: *See—*
Kjellberg, Finn Andre; Lemvig, Svend Edvard Nielsen; and Kjellberg, Bent Ivan, 3,800,916.

Lent, Ralph C., to Del Monte Corporation. Apparatus for cutting articles. 3,800,693, Cl. 99-643.000.

Lentz, Carl A., to General Motors Corporation. Engine and transmission power trains and controls. 3,800,629, Cl. 74-869.000.

Lepage, Alain M., to Compagnie Francoise des Petroles France and Compagnie Maritime d'Expertises. Self-propelled, cable-supported diving bell. 3,800,722, Cl. 114-16.00r.

Lepselter, Martin Paul; and MacRae, Alfred Urquhart, to Bell Telephone Laboratories, Incorporated. Preparation of high resolution shadow masks. 3,801,390, Cl. 156-8.000.

Leroy, Pierre; and Sprunck, Emile, to Societe Creusot-Loire. Process for the protection of a tuyere of a refining converter. 3,801,084, Cl. 266-41.000.

Lessig, Samuel H., Jr.: *See—*
Simons, Leon; Lessig, Samuel H., Jr.; and Corrette, Richard H., 3,800,585.

Levers, William E.; and Keith, Charles H., to Celanese Corporation. Filters. 3,800,676, Cl. 93-1.00c.

Levesque, George Napoleon; and Booth, Alexander Norval, Jr., to Brown & Sharpe Manufacturing Company. Bore grinding machine. 3,800,473, Cl. 51-5.000.

Lewis, Clarence P., to Armco Steel Corporation. Thread rolling apparatus. 3,800,580, Cl. 72-68.000.

Lewis, John B.; and Hedrick, Glen W., to United States of America, Agriculture. Hydroxyrmethylated derivatives of resin acids. 3,801,649, Cl. 260-611.00b.

Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm & Haas Company. 3-Hydroxyisothiazoles. 3,801,575, Cl. 260-247.100.

Ley, Kurt: *See*—
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,801,711.

L'Heureux, Roland J. Boat hull. 3,800,725, Cl. 114-56.000.

Liao, Tseng W., to General Electric Company. Means for detecting the inception of corona discharges within induction apparatus. 3,801,899, Cl. 324-52.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Borner, Manfred; Guttmann, Joachim; Loffler, Werner; and Gruchmann, Dietmar, 3,800,388.
Hamann, Gunter; and Zschieschank, Gunter, 3,801,909.
Schimmer, Rigobert; Gesing, Horst; Beerwerth, Wolfgang; and Messerschmidt, Jurgen, 3,800,408.

Licitis, Conars, to Glass, Marvin and Associates. Sound record. 3,801,110, Cl. 274-42.00r.

Liddle, David E.: *See*—
Petty, William D.; and Liddle, David E., 3,801,861.

Lilienstein, Manfred. Direct current measurement. 3,801,907, Cl. 324-117.00r.

Lilliston Corporation: *See*—
Frushour, George Victor; and Nafziger, Marvin Lee, 3,800,517.

Lilly, Eli, and Company: *See*—
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishanan, 3,801,464.

Limque, Ferdinand; and Bertand, Hans Josef, to Ipsen Industries International Gesellschaft mit beschrankter Haftung. Charging device for changing and emptying the heating chamber of vacuum quenching furnaces. 3,801,079, Cl. 266-4.00a.

Lin, Lawrence H., to Bell Telephone Laboratories, Incorporated. Electron beam apparatus. 3,801,792, Cl. 250-398.000.

Lindberg, Fritz L. Screw-holding screwdriver with replaceable nib. 3,800,841, Cl. 145-50.00e.

Linde, Gordon J., to Arnold Dryer Company. Particulate arresting means for cyclonic separator. 3,800,429, Cl. 34-79.000.

Lindl, Gordon J., to Heil Co., The, mesne. Dehydrating system with exhaust gas recycling. 3,801,264, Cl. 432-37.000.

Lindner, Ernst: *See*—
Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,801,570.

Lindre, Jaan: *See*—
Brittain, William J.; and Lindre, Jaan, 3,801,916.

Lindstrom, Olle B., to Svenska Utvecklingsaktiebolaget. Auxiliary electrolyte system. 3,801,376, Cl. 136-160.000.

Lippold, Herbert, to Maschinefabrik Hennecke GmbH. Mould for use in filling of hollow bodies with foam and for the production of hard-foam articles. 3,801,059, Cl. 249-134.000.

Liskey Aluminum, Inc.: *See*—
Sartori, Raymond Gerald, 3,800,582.

Littell, Ruddy: *See*—
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,801,594.

Litteral, Carl J., to Union Carbide Corporation. Process for producing siloxane-polyoxyalkylene block copolymers. 3,801,616, Cl. 260-448.80r.

Little, Richard F.: *See*—
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Litton Systems, Inc.: *See*—
Abbink, Henry C.; and Goodwin, Norman W., 3,800,411.

Livingston, Johnston R., to Marcor Hoysing Systems, Incorporated. Dwelling construction system. 3,800,493, Cl. 52-745.000.

Ljbrink, Eduard: *See*—
Piepers, Gijsbrecht Gerhardus; Vons, Leonard Hendrik; van der Linde, Aart; and Ljbrink, Eduard, 3,801,088.

Lobbe, Armin, to Gewerkschaft Eisenhutte Westfalia. Tunnelling apparatus. 3,800,549, Cl. 61-85.000.

Lock, Everett H.: *See*—
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Lodholz, John: *See*—
Edgerton, Philip; and Lodholz, John, 3,800,955.

Loewe, Walther; Cossmann, Karl-Heinz; and Meyer, Ernst, to Cassella Farbwerke Mainkur-Aktiengesellschaft. Procera for the preparation of 2-(4-amino-phenyl)-6-methyl-benzothiazole. 3,801,587, Cl. 260-304.000.

Loffler, Werner: *See*—
Borner, Manfred; Guttmann, Joachim; Loffler, Werner; and Gruchmann, Dietmar, 3,800,388.

Loft, John T.: *See*—
Droin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,801,404.

Lofton, John T.: *See*—
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,800,375.

Logabox: *See*—
David, Michel, 3,801,198.

Logan, Ralph Andre: *See*—
Dyment, John Cameron; Logan, Ralph Andre; and Schwartz, Bertram, 3,801,391.

Loh, Huai-Kuang, to AMF Incorporated. GFI circuit having tuned circuit fault detector. 3,801,871, Cl. 317-18.00d.

Lohmann, Dieter; and Greber, Gerd, to Ciba-Geigy Corporation. Process for the production of beta-chloroethyl-trichlorosilane. 3,801,614, Cl. 260-448.20e.

Lohr, Alfred; Schwan, Wolfgang; and Tscheck, Wolfgang, to F. Kuppersbusch & Sohne Aktiengesellschaft. Device for steaming foods. 3,800,778, Cl. 126-369.000.

Lohr, Raymond J.; and Quigley, John B., to Marx, Louis, & Co., Inc., mesne. Safety dart and method for manufacturing the same. 3,801,102, Cl. 273-106.50a.

Lombard, Jean G., to Centre d'Etudes et de Recherches de la Machine-Outil. Support device employing a fluid film. 3,801,165, Cl. 308-5.000.

Long, Robert A.: *See*—
Stoudt, Thomas H.; and Long, Robert A., 3,801,460.

Lonning, Thor J. G., to Monsanto Company. Plasticized vinyl chloride polymer blends having improved fire retardancy. 3,801,526, Cl. 260-30.60r.

Lorenz, Edwin Albert: *See*—
Grabiel, John L. W.; Culver, Mark N.; and Lorenz, Edwin Albert, 3,801,973.

Lotspeich, Joseph A., to Gross-Given Manufacturing Company. Vending machine apparatus. 3,801,876, Cl. 317-157.000.

Love, John J.: *See*—
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,800,823.

Love, William W.; Lock, Everett H.; Maurer, William C.; and Heilhecker, Joe K., to Esso Production Research Company. Fluid end for a plunger pump. 3,801,234, Cl. 417-454.000.

Lowrance, Edgar G.; and Eames, John P., to Stone & Webster Engineering Corporation. Removal of acidic gases from hydrocarbon streams. 3,801,698, Cl. 423-234.000.

Lucek, William J. Method of making inflatable shaped articles. 3,801,403, Cl. 156-244.000.

Luck, Egon. Sewage treatment. 3,801,499, Cl. 210-11.000.

Luders, Rudeger; Negele, Richard; and Ruhle, Walter, to Bosch, Robert G.m.b.H. Overrunning roller bearing coupling for engine starter. 3,800,925, Cl. 192-45.000.

Ludington, Ralph S., to Borg-Warner Corporation, mesne. Process for producing dialkenyl dialkyl phosphonates. 3,801,682, Cl. 260-969.000.

Ludwig, Bernard J.: *See*—
Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., 3,801,574.

Ludwig, David Paul: *See*—
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Luk Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul, 3,800,931.

Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, to Boots Pure Drug Company Limited. Fermentation apparatus. 3,801,468, Cl. 195-141.000.

Lutz, Gerhard; and Veil, Karl, to Bosch, Robert, GmbH. Wear equalizing arrangement for the valve plate of an axial piston machine. 3,800,673, Cl. 91-487.000.

Lutz, Karl: *See*—
Helfenberger, Hans; and Lutz, Karl, 3,801,577.

Luz, David Warren, to RCA Corporation. Television deflector circuit with transformerless coupling between the driver and output stage. 3,801,857, Cl. 315-27.0td.

Luz, Hans G.: *See*—
Griese, Alfons; Kalisch, Alfons A.; and Luz, Hans G., 3,801,877.

Lynch, James Edward, to AMP Incorporated. Mounting structure for a connector housing. 3,801,953, Cl. 339-65.000.

Lynn, Dale Everett; and Poll, Everett Lewis, to Bell Telephone Laboratories, Incorporated. Pulse width discriminator. 3,801,828, Cl. 307-231.000.

Lynx Engineering (Sales) Pty. Limited: *See*—
Bruderlin, John Wilfred, 3,800,752.

M & S Engineering, Inc.: *See*—
Meyer, Robert W.; and Swanson, Robert G., 3,801,255.

Macey, Peter Edward: *See*—
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,801,468.

Mach, Wolfgang: *See*—
Scheurermann, Horst; Mach, Wolfgang; and Radiki, Volker, 3,801,602.

Machner, Peter: *See*—
Holzgruber, Wolfgang; Machner, Peter; Kleinhagauer, Otmar; and Matzer, Josef, 3,801,153.

Machtolf, Hans: *See*—
Bogle, Norman; and Machtolf, Hans, 3,800,839.

MacKay, John Meldrum: *See*—
Denton, Douglas Graham; and MacKay, John Meldrum, 3,801,078.

Mackenzie, Peter J., to Woodall Duckham Limited. Through flow fluid treatment apparatus. 3,800,867, Cl. 165-158.000.

Mackie, Ronald D. Ignition systems. 3,800,771, Cl. 123-148.00e.

Mackiernan, Angus W.: *See*—
Hyland, Francis B.; and Mackiernan, Angus W., 3,801,203.

MacPherson, Duncan I. Method for illustrating. 3,800,441, Cl. 35-26.000.

MacRae, Alfred Urquhart: *See*—
Lepselter, Martin Paul; and MacRae, Alfred Urquhart, 3,801,390.

Maeder, Arthur: *See*—
Nachbur, Hermann; and Maeder, Arthur, 3,801,678.

Maemori, Kenichi: *See—*
Akaike, Seiji; and Maemori, Kenichi, 3,801,087.
Magee, Edward F.: *See—*
Membrino, Robert J.; and Magee, Edward F., 3,800,440.
Magee, Philip S., to Chevron Research Company. S-dihydrocarbyl-N-acylphosphore-amidothio, S-Dihydrocarbyl-N-acylphosphoro-amidothio, dithoates. 3,801,680, Cl. 260-950.000.
Magnavox Company, The: *See—*
Ostuni, Joseph J.; and Vincent, Floyd O., 3,801,915.
Magne, Frank C.; Mod, Robert R.; and Sumrill, Gene, to United States of America, Agriculture. Epithioanides as plasticizer-stabilizers. 3,801,525, Cl. 260-30.200.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., to United States of America, Agriculture. N-Substituted fatty acid amide lubricants. 3,801,609, Cl. 260-402.500.
Maguire, Gerald John; and Scarrott, Gordon George, to International Computers Limited. Optical deflection systems. 3,801,180, Cl. 350-7.000.
Mahlmann, James P.; and Scarsella, Edward L., to General Foods Corporation. Compression-granulation of roasted coffee. 3,801,716, Cl. 426-466.000.
Majima, Hideji: *See—*
Fukugami, Goro; Tamura, Chiaki; Majima, Hideji; and Takahashi, Hideo, 3,801,089.
Maki, Robert G. Bag dispenser and holder. 3,800,503, Cl. 53-390.000.
Makino, Hiroshi C.; and Matsumi, Koichi, to Nippon Electric Company, Limited. Method of producing a singe crystal of orthoferrite and thin platelets thereof by means of the floating zone method. 3,801,290, Cl. 23-305.000.
Makisumi, Yasuo. 2,3-Dihydro-4H phieno (3,2-c)(1) benzopyran-4-ones. 3,801,597, Cl. 260-332.20h.
Malashenko, Alexander; Tidbury, Gordon Thomas; and Futcher, Ralph James, to Dominion Engineering Works, Limited. Paper machine seveall with de-aerator. 3,801,435, Cl. 162-202.000.
Malburg, Dieter, to U.S. Philips Corporation. Method of winding a transformer. 3,801,029, Cl. 242-7.030.
Malgdefessll, Heinz; and Verma, Hart Singh, to Siemens Aktiengesellschaft. Getter-containing electric discharge devices. 3,801,850, Cl. 313-174.000.
Mallery, Lawrence E.: *See—*
Arken, Theodore; and Mallery, Lawrence E., 3,800,590.
Mammino, Joseph: *See—*
Gundlach, Robert W.; Mammino, Joseph; Amidon, Alan B.; and Carr, George P., 3,801,315.
Manabe, Jiro: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.
Mandrel Industries, Inc.: *See—*
Powell, John E., 3,800,941.
Wilkes, Don Earl; and Thompson, Charles L., 3,801,919.
Mannesmannrohren-Werke Aktiengesellschaft: *See—*
Dutta, Dipak; and Wurker, Karl-Gerd, 3,800,547.
Manning, David C.; and Fernandez, Frank J., to Perkin-Elmer Corporation, The. Method and apparatus for generating gases for atomic absorption spectrophotometers. 3,801,282, Cl. 23-230.00r.
Mano, Nitsuhiko: *See—*
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.
Mantey, Paul Gerhard; and Knorr, Eberhard, to Eisenwerke Gesellschaft, Maximilianshutte m.b.H. Wear-resistant spouts for metallurgical vessels. 3,801,083, Cl. 266-38.000.
Manufacture Francaise d'Aimes & Cycles de Saint-Etienne: *See—*
Drevet, George, 3,800,455.
Maranci, Arutun: *See—*
Brigmanis, Edmund; and Maranci, Arutun, 3,801,691.
Marancik, William G.: *See—*
Shattes, Walter J.; Marancik, William G.; and Kirk, Bradley S., 3,800,414.
Marathon Oil Company: *See—*
Kelly, Joe T.; and Poettmann, Fred H., 3,800,873.
Knight, Bruce L., 3,800,877.
Marciandi, Franco: *See—*
Petrini, Guido; Moreschini, Luciano; Marciandi, Franco; and Faletti, Franco, 3,801,621.
Marcor Hoysing Systems, Incorporated: *See—*
Livingston, Johnston R., 3,800,493.
Marin, Heiner, to Siemens Aktiengesellschaft. Compressed-gas circuit breaker. 3,801,763, Cl. 200-148.00r.
Mark Controls Corporation: *See—*
Medina, Conrad R., 3,800,824.
Mark, Jay Anthony. Apparatus for removing nitrogen oxides from engine exhaust. 3,801,696, Cl. 423-212.000.
Markarov, Mikhail Nikolaevich: *See—*
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.
Marks, Robert G. Pull-apart safety switch with magnetic means for machines. 3,801,767, Cl. 200-161.000.
Marquis, Edgar E., to Robertshaw Controls Company. Cycle timer means for ovens. 3,801,754, Cl. 200-38.0fa.
Marrese, Rocco Anthony; and Sullivan, William T. O. Anesthesia apparatus having negative pressure relief means. 3,800,793, Cl. 128-188.000.
Marsden, Howard A.: *See—*
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,800,670.
Marshall, Joseph, III. Applicator gun for applying hardenable plastic compositions containing fibers. 3,801,009, Cl. 239-9.000.
Marshall, Richard L.; and Sullivan, Dennis J., to United Aircraft Corporation. Piloted flameholder construction. 3,800,527, Cl. 60-39.720.
Marshall, Robert D. Awning for travel trailers and the like. 3,800,484, Cl. 52-69.000.
Marsheck, Robert M., to Phillips Petroleum Company. Oxidative dehydrogenation of organic compounds. 3,801,671, Cl. 260-680.00e.
Marsheck, William J.: *See—*
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, 3,801,459.
Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, to Roussel-UCLAF. Cyclopentanone derivatives. 3,801,623, Cl. 260-468.00d.
Martin, Eugene G., to Weaver, Victor F., Inc. Industrial washing machine. 3,801,371, Cl. 134-99.000.
Martin, Frank V. Golf practice apparatus. 3,801,107, Cl. 273-176.00f.
Martin, Ilie: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Martin, Jerry Roy; and Goldstein, Alma W., to Abbott Laboratories. Erythromycin E. 3,801,465, Cl. 195-80.00r.
Martin, Manfred: *See—*
Wolz, Hermann; Wenzel, Rupert; Martin, Manfred; and Scharfe, Gerhard, 3,801,662.
Martin, Robert T. Vaporizer. 3,801,016, Cl. 239-219.000.
Martin, Sterling T., to United Carbide Corporation. Device for collecting the contents of cuvets in a rotating spectrophotometer analyzer. 3,801,004, Cl. 233-26.000.
Martin, Thomas B.; and Pieters, Ferdinandus A., to Micropump Corporation. Pump impeller construction. 3,801,241, Cl. 418-152.000.
Martin, William, to Uniline Corporation. Merchandise marking gun. 3,800,701, Cl. 101-288.000.
Martin-Garin, Gerard G.: *See—*
Danton, Jacques J.; Janex, Albert A.; and Martin-Garin, Gerard G., 3,801,980.
Martynov, Oleg Viktorovich: *See—*
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.
Marvel, John Ray: *See—*
Augsburger, Larry Louis; and Marvel, John Ray, 3,801,709.
Marvin Electric Manufacturing Company: *See—*
Docimo, Peter J., 3,801,815.
Marx, Louis, & Co., Inc., mesne: *See—*
Lohr, Raymond J.; and Quigley, John B., 3,801,102.
Maschinefabrik Hennecke GmbH: *See—*
Lippold, Herbert, 3,801,059.
Maschinenfabrick Burckhardt AG: *See—*
Strebel, Albert, 3,801,167.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Zeller, Rainer, 3,801,386.
Masjda, Naosuke; and Abe, Toshihiro, to Jidosha Kiki Kabushiki Kaisha. Fluid pressure regulator valve and safety valve assembly. 3,801,162, Cl. 303-84.00a.
Massenger, Edward J., to Garlock Inc. Shaft seal. 3,801,111, Cl. 277-58.000.
Massey-Ferguson Inc.: *See—*
Dornan, Arthur E., 3,800,617.
Rose, Jack H., 3,800,910.
Masson Scott Thrissell Engineering Limited: *See—*
Wood, David, 3,801,780.
Mastrolia, Edmund J.; and Michigian, Harry J., to Aerojet-General Corporation. Processing aids for hydroxy-terminated polybutadiene propellant (U). 3,801,385, Cl. 149-19.900.
Masuda, Senichi. Booth for electrostatic powder painting with contact type electric field curtain. 3,801,869, Cl. 317-3.000.
Matairco S.A.: *See—*
Denis, Andre Hector, 3,800,537.
Mathis, Ronald J.: *See—*
Melton, Rosser B., Jr.; Clark, John M., Jr.; Mathis, Ronald J.; Weatherford, William D., Jr.; and Wood, Charles D., III, 3,801,346.
Matsumi, Koichi: *See—*
Makino, Hiroshi C.; and Matsumi, Koichi, 3,801,290.
Matsumi, Koichi, to Nippon Electric Company, Ltd. Apparatus for heating a sample with radiation energy concentrated by a reflector essentially composed of spheroidal surface portions. 3,801,773, Cl. 219-349.000.
Matsumoto, Seiji; and Tamai, Yasuo, to Xerox Corporation. Electrostatic latent image developing apparatus. 3,800,744, Cl. 118-637.000.
Matsumura, Hiroyoshi: *See—*
Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, 3,801,181.

Matsumura, Toshio; and Tanaka, Kojiro. Digital electronic timepiece. 3,800,524, Cl. 58-50.00r.
Matsuoka, Chikara, to Toyota Jidosha Kogyo Kabushiki Kaisha. Resilient bushing. 3,801,209, Cl. 403-225.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kojima, Kunio; Shimada, Kazuyuki; and Wada, Mitsuo, 3,801,364.
Nakata, Yoshinobu; and Nagahiro, Michinori, 3,801,041.
Nishino, Atsushi; Kumano, Hiroshi; and Hayakawa, Hayashi, 3,801,479.
Matsushita Electric Industrial Company, Limited: *See*—
Sano, Yoshiaki; Ishikawa, Tomio; Hirose, Yoshitaka; and Miki, Yasumasa, 3,801,331.
Matzek, Johanna. Educational sewing doll. 3,800,436, Cl. 35-8.00r.
Matzer, Josef: *See*—
Holzgruber, Wolfgang; Machner, Peter; Kleinhagauer, Otmar; and Matzer, Josef, 3,801,153.
Mauch, Robert E.; and Sarbacher, Robert I., to Bogue, John C. Emergency lighting equipment. 3,801,794, Cl. 307-66.000.
Maucher, Paul, to Luk Lamellen und Kupplungsbau GmbH. Clutch disc. 3,800,931, Cl. 192-106.200.
Maurer, William C.: *See*—
Love, William W.; Lock, Everett H.; Maurer, William C.; and Heilhecker, Joe K., 3,801,234.
Maurits, Orville C.: *See*—
Babb, John H., Jr.; and Maurits, Orville C., 3,800,573.
Mauritz, Frank A. Door Locking apparatus. 3,801,145, Cl. 292-184.000.
May, Czeslaw J.: *See*—
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.
Mayr, Helmut: *See*—
Pelte, Richard; Huber, Theo; and Mayr, Helmut, 3,801,194.
Mays, Alfred Thomas, to Johnson & Johnson. Methods of recovering waste cellulosic fibers. 3,801,273, Cl. 8-141.000.
Mazuela, Jose Lois Pemjean. Game employing tiltable game board with an inverted cup and two balls. 3,801,103, Cl. 273-117.000.
Mazzarins, Janis, to General Motors Corporation. Traction device for rubber-tired vehicle. 3,801,164, Cl. 305-23.000.
McCann, Gerald P., to McCann's Engineering & Mfg. Co. Soft drink dispenser disconnect assembly. 3,800,826, Cl. 137-560.000.
McCann's Engineering & Mfg. Co.: *See*—
McCann, Gerald P., 3,800,826.
McCarstle, Cecil M. Weight lifting and transfer device. 3,801,069, Cl. 254-143.000.
McCarty, Bertha J.: *See*—
Hoxeng, Julian S., 3,800,336.
McCaully, Ronald J.: *See*—
Nudelman, Abraham; and McCaully, Ronald J., 3,801,568.
McCord, Wilfred M., Jr., to Vermont American Corporation. Dovetail fixture. 3,800,840, Cl. 144-87.000.
McCown, Oral S.: *See*—
Brewer, Howell K.; and McCown, Oral S., 3,801,377.
McCullough, Charles W., to Ford Motor Company. Supplemental pull-down mechanism for carburetor automatic choke. 3,800,762, Cl. 123-119.00f.
McDaniel, George H., to Bendix Corporation, The. Electronic conversion system. 3,801,803, Cl. 235-154.000.
McDonnell, Harry: *See*—
Garbe, Dietmar Rudolf; and McDonnell, Harry, 3,800,800.
McGann, James Edward: *See*—
Morby, John Alfred; and McGann, James Edward, 3,801,875.
McGee, Thomas D., to Iowa State University Foundation, Inc. Process for producing high density ceramic products. 3,801,688, Cl. 264-65.000.
MCI, Inc.: *See*—
Strickland, James C., 3,801,920.
McInnis, Andrew M.; and Sheldon, Dunstan P., to Sheldon Industries Inc. Multiple sheet imprinting apparatus. 3,800,700, Cl. 101-269.000.
McIntyre, Matthew, to Jervis Corporation. Remote control rearview mirror. 3,800,619, Cl. 74-501.00m.
McKee, Albert E. Portable oxygen cylinder assembly. 3,800,819, Cl. 137-343.000.
McKelvey, Harold E.: *See*—
Jendrisak, Joseph E.; and McKelvey, Harold E., 3,800,477.
McKindree, Delbert R. Connecting rod insert bearing for internal combustion engines. 3,801,173, Cl. 308-204.000.
McKnight, James J.; and Goldalian, Jack, Jr., to Johnson & Johnson. Laminated collagen film dressing. 3,800,792, Cl. 128-156.000.
McLaen, Donald F.: *See*—
Evans, Francis J.; and McLaen, Donald F., 3,801,321.
McLaughlin, Michael H.: *See*—
Corman, James C.; Edgar, Robert F.; McLaughlin, Michael H.; and Tompkins, Russell E., 3,801,843.
McLeod, William J.: *See*—
Smith, Calvin S.; and McLeod, William J., 3,801,708.
McMichael, Cyrus. Vehicle periscope. 3,801,187, Cl. 350-301.000.
McMillen, Kenneth G.: *See*—
Miller, Wendell E.; and McMillen, Kenneth G., 3,800,536.
McMillen, Leanne S.: *See*—
Miller, Wendell E.; and McMillen, Kenneth G., 3,800,536.
McNeil Laboratories, Inc.: *See*—
Carson, John Robert, 3,801,605.
McPherson, Alexander W.; and Sendoykas, Jack J., to Dover Corporation. Universal clamp with adjustable retention means. 3,801,091, Cl. 269-91.000.
McWhorter, Daniel M., to Kendall Company, The. Irrigation adapter. 3,800,799, Cl. 128-349.00r.
Mead Corporation, The: *See*—
Hollingsworth, Albert A., 3,801,141.
Mead Johnson & Company: *See*—
Comer, William T.; and Roth, Herbert R., 3,801,631.
Meckler, Milton. Peltier effect diffusion apparatus. 3,801,284, Cl. 23-263.000.
Mecredy, James R., to Cleveland Range Company, The. Spool valve device. 3,800,829, Cl. 137-625.270.
Medical Incorporated: *See*—
Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., 3,800,403.
Medicor Muvek: *See*—
Kiszel, Janos; and Papp, Laszlo, 3,800,784.
Medina, Conrad R., to Mark Controls Corporation. Check valve. 3,800,824, Cl. 137-541.000.
Medovar, Boris Izrailevich: *See*—
Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich, 3,801,718.
Meek, George W., to Aktiebolaget Carl Munters. Corrugated sheet member with a reinforcing edge extending lengthwise of the corrugations. 3,801,419, Cl. 161-44.000.
Meek, William H., to Ferro Corporation. Compounds of 2',5'-substituted nitroanilides of substituted nitrosalicylic acid. 3,801,637, Cl. 260-559.00s.
Meier, Dale J.; and Kruka, Vitold R., to Shell Oil Company. Method and composition for reducing the frictional drag of flowing fluids. 3,801,508, Cl. 252-59.000.
Meier-Windhorst, Christian August, to Artos-Gesellschaft fur industrielle Forschung und Entwinklung C.A. Meier-Windhorst. Apparatus for treatment of materials particularly the heat treatment of webs. 3,800,438, Cl. 34-156.000.
Meinold, Lloyd K.; and Helton, Eugene L., to Caterpillar Tractor Company. Wire-clip retaining means for tip-retaining pin. 3,801,210, Cl. 403-318.000.
Meisenburg, Ewald; and Langenberg, Rolf. Apparatus for recovering crystals. 3,801,285, Cl. 23-273.00f.
Meiser, Werner; Behrenz, Wolfgang; and Buchel, Karl-Heinz, to Bayer Aktiengesellschaft. Insecticidally active acylated b,b,b-trichloro α-[3,4-dichlorophenyl]-ethanol. 3,801,712, Cl. 424-311.000.
Melton, Rosser B., Jr.; Clark, John M., Jr.; Mathis, Ronald J.; Weatherford, William D., Jr.; and Wood, Charles D., III, to Zachry, H. B., Company, mesne. Method for applying particulate coating material to a work piece. 3,801,346, Cl. 117-16.000.
Meltsner, Bernard R., to Ethyl Corporation. Hindered phenolic phosphorodithioate antioxidants for SBR polymers. 3,801,543, Cl. 260-45.95c.
Melzer, Eugene: *See*—
Raatz, Helmuth E.; and Melzer, Eugene, 3,800,501.
Membrino, Robert J.; and Magee, Edward F., to Singer Company, The. Radio identification system simulator (IFF). 3,800,440, Cl. 35-10.400.
Mendel, Arthur: *See*—
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,801,588.
Menissier, Pierre Lucien: *See*—
Chaulet, Roger Louis; Guichard, Claude Pierre Albert Louis; Menissier, Pierre Lucien; and Soret, Jean-Claude Georges, 3,800,848.
Merck & Co., Inc.: *See*—
Reinhold, Donald F.; Sletzinger, Meyer; and Firestone, Raymond A., 3,801,601.
Stoudt, Thomas H.; and Long, Robert A., 3,801,460.
Merriken, Lyal N.: *See*—
Shand, J. Richard; and Merriken, Lyal N., 3,801,758.
Merrin, Seymour, to Innotech Corporation. Glass switching device using an ion impermeable glass active layer. 3,801,878, Cl. 317-234.00r.
Merrin, Seymour, to Innotech Corporation. Junction device employing a glassy amorphous material as an active layer. 3,801,879, Cl. 317-234.00r.
Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus Maria, to U.S. Philips Corporation. Closed vessel comprising a digital light deflection system. 3,801,184, Cl. 350-160.00r.
Messerschmidt, Jurgen: *See*—
Schimmer, Rigobert; Gesing, Horst; Beerwerth, Wolfgang; and Messerschmidt, Jurgen, 3,800,408.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Schnabele, Werner, 3,800,656.
Messrs, Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Goto, Kenji; and Mizuno, Kiyohiko, 3,800,764.
Metal Lux S.p.A.: *See*—
Tassara, Pino, 3,800,738.
Metallgesellschaft AG: *See*—
Ahland, Erwin; and Ratajczak, Ernst-Albert, 3,800,428.
Metzger, Adolf: *See*—
Lademann, Rudolf; Weisenberger, Karl; and Metzger, Adolf, 3,801,632.
Metzger, Karl Georg: *See*—

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,801,711.
Meya, Hans: *See—*
Holken, Norbert; and Meya, Hans, 3,800,546.
Meyer, Ernst: *See—*
Loewe, Walther; Cossmann, Karl-Heinz; and Meyer, Ernst, 3,801,587.
Meyer, Jeffry R., to Westinghouse Electric Corporation. Grounding switch. 3,801,768, Cl. 200-163.000.
Meyer, Robert W.; and Swanson, Robert G., to M & S Engineering, Inc. Automatic casting machine. 3,801,255, Cl. 425-147.000.
Michaelis, Heinz; Rethmeier, Gerhard; and Schmieder, Fritz, to Anker-Werke AG. Apparatus for automatic processing of data. 3,801,774, Cl. 235-61.60r.
Michel, Eberhard, to Siemens Aktiengesellschaft. Method for examining the inner surface of a hollow member. 3,800,598, Cl. 73-104.000.
Michigian, Harry J.: *See—*
Mastrolia, Edmund J.; and Michigian, Harry J., 3,801,385.
Micropump Corporation: *See—*
Martin, Thomas B.; and Pieters, Ferdinandus A., 3,801,241.
Middleton, William J., to Du Pont de Nemours, E. I., and Company. Alpha-beta-bis(trifluoromethyl)stilbenes. 3,801,650, Cl. 260-612.00r.
Midwest Research Institute: *See—*
Milne, Thomas A., 3,801,788.
Mietzel, Dennis O.: *See—*
Pleus, Edwin F.; and Mietzel, Dennis O., 3,800,837.
Mikheeva, Natalia Vasilievna: *See—*
Tolstoguzov, Vladimir Borisovich; Mzhelsky, Alexandr Ivanovich; Ershova, Vera Alexandrovna; Braudo, Evgeny Evgenievich; and Mikheeva, Natalia Vasilievna, 3,801,713.
Miki, Yasumasa: *See—*
Sano, Yoshiaki; Ishikawa, Tomio; Hirose, Yoshitaka; and Miki, Yasumasa, 3,801,331.
Milani, Giuseppe, to Apparecchiature E. Macchine Utensili S.A.S. di Milani Giuseppe & C. Apparatus for extruding profiles of thermoplastic material. 3,801,249, Cl. 425-204.000.
Milburn, George, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel elements. 3,801,452, Cl. 176-78.000.
Miles, Michael E.; and Donnelly, James F., to Jamesbury Corporation. Cryogenic butterfly valve. 3,801,066, Cl. 251-306.000.
Milgo Electronic Corporation: *See—*
Ragsdale, Robert Gordon, 3,801,912.
Miller, Frank E.; and Sulcek, Charles E., to Whirlpool Corporation. Means for mounting components of a refuse compactor in coordinated relationship. 3,800,694, Cl. 100-45.000.
Miller, George A.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 3,801,575.
Miller, Orville C.: *See—*
Sauer, Louis E.; and Miller, Orville C., 3,800,421.
Miller, Raymond F. Limbo game apparatus. 3,801,096, Cl. 273-1.00r.
Miller, Stanley J., to National Can Corporation. Cup transfer apparatus and system for drawing. 3,800,583, Cl. 72-349.000.
Miller, Wendell E.; and McMillen, Kenneth G.; deceased (by McMillen, Leanne S.; administratirx). Demand hydraulic system with cooling flow circuit. 3,800,536, Cl. 60-456.000.
Milne, David T.; and Cook, George W., to United States of America, Navy. Low-phase-shift incremental FM demodulator. 3,801,918, Cl. 329-104.000.
Milne, Thomas A., to Midwest Research Institute. Mass marking for spectrometry using programmed molecule clusters. 3,801,788, Cl. 250-282.000.
Milton, Charlotte M. Board and cards game. 3,801,106, Cl. 273-161.000.
Milton, Thomas J.: *See—*
Krom, Lynn C.; and Milton, Thomas J., 3,801,756.
Mimeur, Robert, to Etablissements Carpano & Pons S.A. Adjustment device for safety ski binding. 3,801,121, Cl. 280-11.35t.
Minatodani, Shinichi; and Oishi, Hisashi, to Nippon Gakki Seizo Kabushiki Kaisha. Mark carrying member affixed on a rough surface article. 3,800,449, Cl. 40-2.00r.
Mine Safety Appliances Company: *See—*
Temple, Ernest E., 3,801,759.
Minick, John R.: *See—*
Racunas, Bernard J.; and Minick, John R., 3,801,003.
Minisci, Francesco; Bertini, Franco; Galli, Remo; and Quilico, Adolfo, to Montecatini Edison S.p.A. Process for the alkylation of the pyridine ring. 3,801,580, Cl. 260-290.00r.
Ministerium fur Verkehrswesen: *See—*
Donath, Hans; Beier, Hans-Peter; Otto, Gottfried; Mutz, Werner; and Tausch, Winfried, 3,801,146.
Mink, Alan E.; and Mitchell, Darrell D., to Dow Corning Corporation. Hydrogen-functional organopolysiloxanes. 3,801,544, Cl. 260-448.20h.
Minnesota Mining & Manufacturing Company: *See—*
Allen, Michael George; Buchholtz, Theodore; and Tiers, George Van Dyke, 3,801,421.
Minnesota Mining and Manufacturing Company: *See—*
Guehler, Paul F.; and Hofacker, David A., 3,801,011.
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,801,588.
Sevelin, Charles V.; and Palmquist, Philip V., 3,801,183.
Minolta Camera Kabushiki Kaisha: *See—*
Kosaka, Takeshi; and Yuasa, Yoshio, 3,801,736.
Uchida, Isamu, 3,800,655.
Yamagishi, Seiichi, 3,800,992.
Minor, Robert N.: *See—*
Stager, Francis W.; and Minor, Robert N., 3,800,977.
Minsart, Maurice: *See—*
Duikers, Marcel; and Minsart, Maurice, 3,800,638.
Minyu, Toshikazu: *See—*
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.
Miquel, Jean: *See—*
Juguin, Bernard; Le Page, Jean Francois; and Miquel, Jean, 3,801,516.
MIS Systems Corporation: *See—*
Larson, Rodney L.; and Petersen, Niel R., 3,800,588.
Misjura, Rostislav Spiridonovich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850
Mistarz, Robert J.; and Mojonnier, Albert B., to Koehring Company. Automatic plastic bottling system and method. 3,800,400, Cl. 29-426.000.
Mitake, Susumu: *See—*
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.
Mitchell, Americus: *See—*
Brennan, James Norton; and Mitchell, Americus, 3,800,578.
Mitchell, Darrell D.: *See—*
Mink, Alan E.; and Mitchell, Darrell D., 3,801,544.
Mitchell, Richard Frank, to U.S. Philips Corporation. Acoustic surface wave devices. 3,801,935, Cl. 333-72.000.
Mitsuhashi, Masakazu; and Hirao, Mamoru, to Hayashibara Company. Production of beta-amylase. 3,801,462, Cl. 195-66.00r.
Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
Takeuchi, Tetsuo; and Orimoto, Tadashi, 3,800,980.
Miyagawa, Kiyoshi: *See—*
Kobayashi, Akiyoshi; and Miyagawa, Kiyoshi, 3,800,776.
Miyake, Toshio; and Shiosaka, Makuto, to Hayashibara Company. Process for the extraction of enzymes from microorganisms. 3,801,461, Cl. 195-66.00r.
Miyano, Masateru: *See—*
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, 3,801,459.
Miyashita, Tsune: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.
Miyata, Saburo. Magnetic filter for lubricants. 3,800,914, Cl. 184-6.250.
Miyata, Tomiaki; Hamada, Shinji; Watanabe, Shigenobu; and Ogawa, Toshiko, to Fuji Shashin Film Kabushiki Kaisha. Poto-sensitive sheet drying apparatus. 3,800,432, Cl. 34-151.000.
Miyata, Yasuo: *See—*
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.
Mizelle, Ned W., to Seng Company, The. Convertible settee-bed. 3,800,337, Cl. 5-43.000.
Mizikar, Eugene A.; and Rehmus, Frederick H., to Jones & Laughlin Steel Corporation. Apparatus for cooling of vacuum-cast ingots. 3,800,856, Cl. 164-283.000.
Mizuno, Kiyohiko: *See—*
Goto, Kenji; and Mizuno, Kiyohiko, 3,800,764.
Mizushima, Masashi: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.
Mlavsky, Abraham I., to Tyco Laboratories, Inc. Production of eutectic bodies by unidirectional solidification. 3,801,309, Cl. 75-135.000.
M.M.S. Limited, mesne: *See—*
Schindler, Herbert; and Ware, Willard O., 3,800,748.
Mocaraski, Zenon R., to S.R.C. Laboratories, Inc. Air gun and nozzle therefor. 3,801,020, Cl. 239-417.300.
Mod, Robert R.: *See—*
Magne, Frank C.; Mod, Robert R.; and Sumrill, Gene, 3,801,525.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,801,609.
Mogel, Ralph E.; and Coury, William J. Sectional expandable pencil holder. 3,800,974, Cl. 220-23.400.
Mojonnier, Albert B.: *See—*
Mistarz, Robert J.; and Mojonnier, Albert B., 3,800,400.
Molenaar, Albert Meijlom; and Veenstra, Melle, to Douve Egberts Koninkijki Tabaksfabrick Koffiebranderijen-Theehauld N.V. Coffee filtering. 3,800,690, Cl. 99-295.000.
Monell, Bradner Neil, to Western Electric Company, Incorporated. Methods of and apparatus for coiling strand material. 3,801,037, Cl. 242-83.000.
Monsanto Company: *See—*
Erickson, Floyd B., 3,801,320.

Lonning, Thor J. G., 3,801,526.
Schmidt, John G., 3,801,384.
Montecatini Edison S.p.A.: *See*—
Minisci, Prancesco; Bertini, Franco; Galli, Remo; and Quilico, Adolfo, 3,801,580.
Petrini, Guido; Moreschini, Luciano; Marciandi, Franco; and Faletti, Franco, 3,801,621.
Montigny Company: *See*—
Montigny, Joseph William; and Brothers, Jack Ray (said Brothers assor. to), 3,801,074.
Montigny, Joseph William: *See*—
Montigny, Joseph William; and Brothers, Jack Ray, 3,801,074.
Montigny, Joseph William; and Brothers, Jack Ray, to Montigny, Joseph William and said Brothers assor. to Montigny Company. Mixing and dispensing apparatus. 3,801,074, Cl. 259-8.000.
Montogomery, Clifford S., to Fauver, J. N., Inc., mesne. Conveyor drive control system. 3,800,935, Cl. 198-24.000.
Moore, Alan; and Rolls-Royce (1971) Limited. Fluid flow blades. 3,801,218, Cl. 416-97.000.
Moore, Alvin Edward. Ballooned, stol aircraft. 3,801,044, Cl. 244-5.000.
Moore, Brian B.; and Thorn, Caryl A., to International Business Machines Corporation. Communication mechanism for data transfer and control between data processing systems and subsystems. 3,801,962, Cl. 340-172.500.
Moore, Darrlle D.: *See*—
Wagner, Hubert; and Moore, Darrlle D., 3,801,278.
Moore, Eugene R.; Smith, Linton E., III; and Pickelman, Dale M., to Dow Chemical Company, The. Low melt viscosity molding process for high heat distortion interpolymers. 3,801,549, Cl. 260-78.0ua.
Moore, James G., to Blaw-Knox Food and Chemical Equipment Inc. Support assembly for a shaft. 3,801,168, Cl. 308-15.000.
Moore, Lawrence A., to Beloit Corporation. Method and apparatus for heating parisons. 3,801,263, Cl. 432-19.000.
Moore, Lewis Frank; and Price, George McNair, to Frymaster Corporation, The. Melt cycle control system. 3,800,779, Cl. 126-374.000.
Moore, Thomas M.; and Boyden, Thomas F., to Standard Oil Company. Combination hydrodesulfurization and reforming process. 3,801,494, Cl. 208-79.000.
Moore, Walter L. Offset breakwater configuration. 3,800,543, Cl. 61-5.000.
Morby, John Alfred; and McGann, James Edward, to General Electric Company. Non-metallic load center with improved bus bar construction. 3,801,875, Cl. 317-120.000.
Morconi Instruments Limited: *See*—
Parkyn, John Michael, 3,801,925.
Moreau, Wayne M., to International Business Machines Corporation. O-Dithialane-photosensitive compositions. 3,801,327, Cl. 96-115.00r.
Moreschini, Luciano: *See*—
Petrini, Guido; Moreschini, Luciano; Marciandi, Franco; and Faletti, Franco, 3,801,621.
Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Novel polymers and dope of aromatic polyamides containing a stilbene radical. 3,801,528, Cl. 260-308.00r.
Morishita, Hajime; Hirai, Takako; and Nonogaki, Saburo, to Hitachi, Ltd. Stabilized cathode ray-sensitive coating film. 3,801,538, Cl. 260-45.90r.
Morishita, Hirosada; Sasaki, Ryusei; Sakashita, Kiyoshi; and Yasui, Eiji, to Hitachi, Ltd. Printed circuit plate. 3,801,427, Cl. 161-162.000.
Morris, George R., to Ford Motor Company. Automatic clearance adjuster for clutch bearing. 3,800,929, Cl. 192-99.00s.
Morrison, Charles F., Jr., to Valleylab, Inc. Switching means for an electro-surgical device including particular contact means and particular printed-circuit mounting means. 3,801,766, Cl. 200-157.000.
Morse, Donald B.; and Pribish, Bernard A., to Kemlite Corporation. Machine for trimming the edges of panels. 3,800,647, Cl. 83-365.000.
Morse, Glenn B. Assembly for converting a drill press to a circular saw. 3,800,838, Cl. 144-1.00c.
Mosler Safe Company, The: *See*—
Edwards, Richard C., 3,801,960.
Mothes, Heinz: *See*—
Gawlick, Heinz; Schatz, Arthur; and Mothes, Heinz, 3,800,706.
Motoren-und Turbinen-Union Munchen GmbH: *See*—
Holzhauer, Hilbert; and Rohra, Alois, 3,801,216.
Motorola, Inc.: *See*—
Braun, William V.; and Bruckert, Eugene J., 3,801,956.
Dame, John S., 3,801,831.
Lai, Chi Sun, 3,801,834.
Russell, Ronald W.; and Solomon, James E., 3,801,923.
Mourlon, Jean-Claude; and Dubois, Ernest Marie Rene, to Bertin & Cie and Entreprise de Recherches et d'Activites Petrolieres-Elf. Apparatus for removing a substance floating as a layer on the surface of a body of liquid. 3,800,951, Cl. 210-242.000.
Movchan, Boris Alexeevich: *See*—
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850
Mueller, Hans; and Voigt, William C., to Texas Instruments Incorporated. Differential amplifier. 3,801,924, Cl. 330-69.000.
Mueller, James P.: *See*—
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,800,670.
Mueller, Klaus P.: *See*—
Kreuter, Kenneth G.; and Mueller, Klaus P., 3,801,006.
Mueller, Milton W., to TRW Inc. Fuel pump control system and method. 3,801,228, Cl. 417-282.000.
Mukai, Kunihiko: *See*—
Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, 3,801,181.
Mulfinger, Hans-Otto; Dutz, Hubert; and Krolla, Hans-Georg. Method of producing vitreous layers on substrate materials. 3,801,356, Cl. 117-93.300.
Mullen, William P., to Ford Motor Company. Ball and socket joint. 3,801,169, Cl. 308-72.000.
Mullins, Lawrence J.: *See*—
Nance, Robert L.; Leary, Joseph A.; and Mullins, Lawrence J., 3,801,700.
Multi-State Devices Ltd.: *See*—
Eastwood, H. Keith; Johannes, Robert; Griffiths, Clifford H.; and Gavini, Anibal, 3,801,824.
Munger, Fay E., to Jeffrey Galion Inc. Mining machine with a pivot structure for a mining head, gathering head and discharge conveyor boom. 3,801,157, Cl. 299-64.000.
Munro, Robert G.; and Hale, Rodney B., to Goulder, J., & Sons Limited. Method and apparatus for measuring pitch or indexing errors in toothed members. 3,800,423, Cl. 33-179.500.
Munters, Carl Georg: *See*—
Norback, Per Gunnar, 3,800,859.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, to Bergwerksverband GmbH. Carbon containing molecular sieves. 3,801,513, Cl. 252-421.000.
Murakami, Robert E., to United States of America, Air Force. Explosive enclosure apparatus. 3,800,703, Cl. 102-1.00r.
Murayama, Seiichi: *See*—
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.
Murphy, Reuel A. Pontoon house boat. 3,800,726, Cl. 114-62.000.
Murray, Gerald F. Golfer's wrist-release detector. 3,801,108, Cl. 273-186.00r.
Muscio, James Edward: *See*—
Baggiolini, Primo; Muscio, James Edward; and Franscioni, Michael Silvio, 3,800,518.
Mussell, Dorsey R.: *See*—
Bidlack, Harvey D.; and Mussell, Dorsey R., 3,801,301.
Muszkiewicz, Robert P., to GTE Sylvania Incorporated. RF amplifier control system. 3,801,922, Cl. 330-29.000.
Mutchler, Paul A., to American Air Filter Company, Inc. Post purge system for gas burners. 3,801,258, Cl. 431-90.000.
Mutz, Werner: *See*—
Donath, Hans; Beier, Hans-Peter; Otto, Gottfried; Mutz, Werner; and Tausch, Winfried, 3,801,146.
Mzhelsky, Alexandr Ivanovich: *See*—
Tolstoguzov, Vladimir Borisovich; Mzhelsky, Alexandr Ivanovich; Ershova, Vera Alexandrovna; Braudo, Evgeny Evgenievich; and Mikheeva, Natalia Vasilievna, 3,801,713.
N L Industries, Inc.: *See*—
Gildemeister, Donald, 3,801,098.
Kutler, Gerald; and Easwaran, Jairaj, 3,801,303.
Simons, Leon; Lessig, Samuel H., Jr.; and Corrette, Richard H., 3,800,585.
N. V. Bekaert, S.A.: *See*—
Steenhoudt, Jan, 3,801,396.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy AG. Phosphonopropionic acid amides. 3,801,678, Cl. 260-943.000.
Naegeli, Peter, to Givaudan Corporation. Olfactory dioxolane derivatives and compositions containing same. 3,801,600, Cl. 260-340.500.
Nafziger, Marvin Lee: *See*—
Frushour, George Victor; and Nafziger, Marvin Lee, 3,800,517.
Nagahama, Mitsuo: *See*—
Seino, Tetsuya; Nagahama, Mitsuo; and Nishi, Kengo, 3,800,625.
Nagahiro, Michinori: *See*—
Nakata, Yoshinobu; and Nagahiro, Michinori, 3,801,041.
Nagao, Yoshio: *See*—
Nishikawa, Yukio; Nagao, Yoshio; and Hirose, Iwao, 3,801,200.
Nagarajan, Ramakrishanan: *See*—
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishanan, 3,801,464.
Nagele, Karl, F., Dr., Feinmaschinenbau: *See*—
Popovitsch, Ernst, 3,800,367.
Nagy, Ernest J., to Pullman Incorporated. Railway car door. 3,800,472, Cl. 49-426.000.
Naiman, Charles S.: *See*—
Schwartz, Jacob; and Naiman, Charles S., 3,801,825.
Najmann, Knut: *See*—
Berger, Horst Heinz; Najmann, Knut; Pietrass, Hansgeorg; and Wiedmann, Siegfried, 3,801,967.
Nakabayashi, Masao: *See*—
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Hirano, Hiroshi, 3,801,683.
Nakae, Toshitaka: *See*—
Nobe, Akira; and Nakae, Toshitaka, 3,801,467.

Nakagawa, Koji, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for producing cement expanding agents. 3,801,345, Cl. 106-314.000.

Nakagawa, Shinichi: *See*—
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Nakagawa, Tsuneo: *See*—
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, to Takeda Chemical Industries, Ltd. Novel dipeptide esters containing L-aspartic acid. 3,801,563, Cl. 260-112.500.

Nakajima, Takashi: *See*—
Okuhara, Akira; Nakajima, Takashi; and Saito, Nobuo, 3,801,488.

Nakamura, Masazo. Inclination measuring apparatus. 3,800,426, Cl. 33-368.000.

Nakamura, Naoya: *See*—
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Nakanishi, Wataru. Method for forming an underground wall comprising a plurality of columns in the earth and soil formation. 3,800,544, Cl. 61-35.000.

Nakata, Roy; Ouyang, Mid; and Starr, Wendell T., to General Electric Company. High voltage cable splice with provision for testing the insulation thereof and method of making same. 3,801,730, Cl. 174-73.00r.

Nakata, Yoshinobu; and Nagahiro, Michinori, to Matsushita Electric Industrial Co., Ltd. Leader tape guiding apparatus. 3,801,041, Cl. 242-195.000.

Nakayama, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash-plate type compressor for air conditioning of vehicles. 3,801,227, Cl. 417-269.000.

Nance, Robert L.; Leary, Joseph A.; and Mullins, Lawrence J., to United States of America, Atomic Energy Commission. Preparation of 238Pu 16_{ox}. 3,801,700, Cl. 423-251.000.

Nash, Arthur J.: *See*—
Thompson, Robert R.; Duschatko, Robert W.; and Nash, Arthur J., 3,801,281.

Nash, Dudley O., to General Electric Company. Air cooled augmenter igniter assembly. 3,800,530, Cl. 60-261.000.

NASSOUIA Werkzeugmaschinenfabrik GmbH: *See*—
Pahl, Dietrich, 3,801,487.

National Can Corporation: *See*—
Miller, Stanley J., 3,800,583.

National Cash Register Company, The: *See*—
Janning, John L., 3,801,852.
Skutt, Robert R., 3,801,862.
Touchman, William S., 3,801,842.

National Distillers and Chemical Corporation: *See*—
Frampton, Orville D.; and Feldman, Julian, 3,801,656.

National Petro Chemicals Corporation: *See*—
Krekeler, Jerome H.; Kirch, William; and Aboutboul, Henri A., 3,801,705.

Natoli, Frank S.: *See*—
Ardis, Alan E.; and Natoli, Frank S., 3,801,707.

Nebb, Jervis B., International Company: *See*—
Raoulz, Jean, 3,800,710.

Negele, Richard: *See*—
Luders, Rudeger; Negele, Richard; and Ruhle, Walter, 3,800,925.

Neill, William T.: *See*—
Reynolds, Roy; and Neill, William T., 3,801,151.

Nelson, Richard E., to Honeywell Inc. Three-way snap-acting gas valve. 3,800,828, Cl. 137-625.000.

Nemoto, Kenji; and Saito, Akira, to Kabushiki Kaisha Daini Seikosha. Automatic lathe. 3,800,635, Cl. 82-2.500.

Neptune Meters Limited: *See*—
Hall, Albert E., 3,801,841.

Nercer, Norman J. Appliance construction for use as a hairdressing tool and as a steam iron. 3,800,810, Cl. 132-9.000.

Nesbit, Robert D.: *See*—
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.

Neugebauer, Franz J.: *See*—
Flitner, David P.; La Haye, Paul G.; and Neugebauer, Franz J., 3,800,861.

Neuhaus, Theodore G., to Picker Corporation. Method and apparatus for inspecting tires. 3,801,786, Cl. 250-360.000.

Neumann, Friedhelm; and Zeller, Josef K., to Concast AG. Submerged nozzle for continuous casting. 3,800,853, Cl. 164-281.000.

Neumunstersche Maschinen- und Apparatebau Gesellschaft mbH: *See*-
Bauch, Ernst, 3,801,242.

Neuzy, Hubert: *See*—
Lambert, Michael; Neuzy, Hubert; and Brichard, Claude, 3,801,296.

Newberry, James Henry, Jr. Fence panel. 3,801,072, Cl. 256-19.000.

Newton, David W., to Valleylab, Inc. Isolating switching circuit for an electrosurgical generator. 3,801,800, Cl. 307-117.000.

Newton, Gary. Loader crane for gooseneck trailer. 3,800,966, Cl. 214-77.00r.

Niblack, Walter K.: *See*—
Wall, Ernst L.; and Niblack, Walter K., 3,800,412.

Nickel": *See*—
Rey, Maurice; and Formanek, Victor, 3,801,306.

Nickner, Richard A., to Dow Chemical Company, The. Polyether-polythiols, method of preparation and mixtures of polythioether-polythiols with epoxide resins. 3,801,676, Cl. 260-928.000.

Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Sensor and method of manufacture. 3,800,410, Cl. 29-570.000.

Niino, Kumao, to Koshin Sumitsukikai Kabushiki Kaisha. Pressure foot for sewing machines. 3,800,720, Cl. 112-235.000.

Nijhawan, Sobash, to Varta Aktiengesellschaft. Lead alloy for battery grid. 3,801,310, Cl. 75-166.00c.

Nikolits, Ronald F.; and Kane, Thomas J., to Ford Motor Company. Fastener flash molded integral with parent part. 3,800,369, Cl. 24-221.00r.

Nilles, Paul Emile; and Piret, Jacques, to Eisenwerk-Gesellschaft Maximilianshutte m.b.H. Process for continuously refining metals notably, pig-iron. 3,801,305, Cl. 75-60.000.

Ning, Robert Ye-Fong; and Sternbach, Henryk, to Hoffmann-La Roche Inc. 7-(1,1-Difluoroalkyl)-1,4-benzodiazepines. 3,801,569, Cl. 260-239.30d.

Nippon Electric Company, Limited: *See*—
Anazawa, Shinzo, 3,801,881.
Makino, Hiroshi C.; and Matsumi, Koichi, 3,801,290.

Nippon Electric Company, Ltd.: *See*—
Matsumi, Koichi, 3,801,773.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Minatodani, Shinichi; and Oishi, Hisashi, 3,800,449.

Nippon Paint Company, Ltd.: *See*—
Takimoto, Yasuyuki; Yoshikawa, Toshikazu; Sakurai, Kiyohi; Umeda, Yasusi; and Hirayama, Takeshi, 3,801,328.

Nippon Selfoc Kabushiki Kaisha: *See*—
Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, 3,801,181.

Nippondenso Co., Ltd.: *See*—
Kitano, Akira, 3,801,975.

Nischk, Gunther: *See*—
Kunzel, Hans Egon; Blankenstein, Gunter; Bentz, Francis; and Nischk, Gunther, 3,801,545.

Nishi, Kengo: *See*—
Seino, Tetsuya; Nagahama, Mitsuo; and Nishi, Kengo, 3,800,625.

Nishihara, Akira: *See*—
Furuuchi, Shigemasa; Nishihara, Akira; Okajima, Yasunaru; and Kamimori, Tadatoshi, 3,801,352.

Nishikawa, Yukio; Nagao, Yoshio; and Hirose, Iwao. Apparatus for mounting contact screen in a process camera. 3,801,200, Cl. 355-18.000.

Nishimura, Matsuo; and Tsujimura, Tozaburo, to Yasui Sangyo Company Limited. Apparatus for controlling the angle of rotation of a rotary member. 3,801,801, Cl. 307-149.000.

Nishimura, Osamu: *See*—
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.

Nishino, Atsushi; Kumano, Hiroshi; and Hayakawa, Hayashi, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing solid electrolytic capacitors. 3,801,479, Cl. 204-37.000.

Nishiyori, Kyutaro; and Okada, Masahiro, to Kabushiki Kaisha Watanabe Tekkosho. Apparatus for interchanging sheet-metal slitting equipments. 3,800,648, Cl. 83-479.000.

Nishizawa, Hideyuki. Vessel for chemical action. 3,800,956, Cl. 210-533.000.

Nishkian, Martin A.; and Nuttall, Wayne E., to United States Steel Corporation. Flexible seal for a vapor cavity. 3,800,975, Cl. 220-26.000.

Nisipeanu, Ilie: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Nissan Motor Company, Limited: *See*—
Akaike, Seiji; and Maemori, Kenichi, 3,801,087.

Noack, Dieter, to Siemens Aktiengesellschaft. Compressed gas circuit breaker. 3,801,762, Cl. 200-148.00a.

Nobe, Akira; and Nakae, Toshitaka, to Tokyo Kagaku Sangyo Kabushiki Kaisha. Apparatus for providing temperature gradients. 3,801,467, Cl. 195-139.000.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kaisha. Shutter control circuitry for cameras. 3,800,683, Cl. 354-51.000.

Nogami, Ikuo: *See*—
Arima, Kei; Nogami, Ikuo; and Yoneda, Masahiko, 3,801,457.

Nolte, George J.: *See*—
Peters, Burton, Jr.; Nowak, Leonard J.; and Nolte, George J., 3,801,065.

Nominee, I.W.S., Company Limited: *See*—
Wolfram, Leszek J., 3,801,271.

Nonogaki, Saburo: *See*—

Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.

Morishita, Hajime; Hirai, Takako; and Nonogaki, Saburo, 3,801,538.

Norback, Per Gunnar, to Munters, Carl Georg. Transferrer of the thermodynamic characteristics of two gases. 3,800,859, Cl. 165-9.000.

Nordstrom, Arnold B. Self-erecting cargo pallet lock. 3,800,713, Cl. 105-369.00a.

Noren, Tore H. Swingable comb for closing magnetic switch for controlling hot rinse water in a dishwasher. 3,800,813, Cl. 134-46.000.

Norick, William B.: *See*—
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,800,670.

Norremark, Christian Albert. Combination lock. 3,800,577, Cl. 70-313.000.

North American Philips Corporation: *See*—
Joyce, Michael F., 3,801,832.
Joyce, Michael F., 3,801,893.

North, William D.: *See*—
Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., 3,801,836.

Nowak, Edmund: *See*—
Karkowski, Abdon; Nowak, Edmund; and Szromba, Roman, 3,801,262.

Nowak, Leonard J.: *See*—
Peters, Burton, Jr.; Nowak, Leonard J.; and Nolte, George J., 3,801,065.

Nozawa, Kenji, to Ryowa Choon Kogyo Kabushiki Kaisha. Quick-acting release for a normally locked lid of an emergency smoke duct. 3,800,687, Cl. 98-42.000.

Nudelman, Abraham; and McCaully, Ronald J., to American Home Products Corporation. Optically active 1,3-dihydro-3-substituted-5-phenyl-2H-1,4-benxodiazepin-2-ones and process for their separation. 3,801,568, Cl. 260-239.80d.

Numata, Saburo, to Fuji Shoshin Koki Kabushiki Kaisha. Exposure control device. 3,801,822, Cl. 250-214.00p.

Nusser, Hermann; Van Elden, Hendricus; and Ebert, Jurgen, to Bosch, Robert, GmbH. Pump and electric driven motor unit. 3,801,231, Cl. 417-410.000.

Nuttall, Wayne E.: *See*—
Nishkian, Martin A.; and Nuttall, Wayne E., 3,800,975.

N.V. Optische Industrie "De Oude Delft": *See*—
Geluk, Ronald Jan, 3,801,739.

N.V. Rubberfabriek Vraderstein: *See*—
Piersma, Leonardus Jacovus; and Siemes, Albertus Frederikus, 3,801,398.

Oba, Yoichi: *See*—
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.

Oberpichler, Gerd, to Volkswagenwerk Aktiengesellschaft. Hydraulic control device. 3,800,627, Cl. 74-752.00c.

O'Brien, Gerard J. Remote-controlled two-position actuator. 3,801,959, Cl. 340-148.000.

O'Brien, James P.; and Hammond, John W., 1/3 to Schramm, Paul H. Remote electronic lock apparatus and methods. 3,801,742, Cl. 179-2.00r.

O'Connell, Gertrude S.; and O'Connell, William H. Reading accelerator. 3,800,443, Cl. 35-35.00h.

O'Connell, William H.: *See*—
O'Connell, Gertrude S.; and O'Connell, William H., 3,800,443.

O'Connell, William J. J., to General Electric Company. Process for preparing polycarbonate alloys. 3,801,673, Cl. 260-873.000.

O'Connor, Thomas J. Structure for electrical machining. 3,801,770, Cl. 219-69.00v.

Oertle, Donald H.: *See*—
Radd, Frederick J.; Oertle, Donald H.; and Wolee, Louis H., 3,801,158.

Ofstead, Eilert A.; and Calderon, Nissim, to Goodyear Tire & Rubber Company, The. Poly-1-chloro cyclooctadiene. 3,801,559, Cl. 260-91.500.

Ogawa, Mutsuo: *See*—
Komura, Yasuyuki; Hirata, Shinichi; Fukushima, Takashi; and Ogawa, Mutsuo, 3,801,737.

Ogawa, Takuzo: *See*—
Kamei, Tatsuya; Ogawa, Takuzo; Kodera, Hiroshi; and Kanda, Yozo, 3,801,885.

Ogawa, Toshiko: *See*—
Miyata, Tomiaki; Hamada, Shinji; Watanabe, Shigenobu; and Ogawa, Toshiko, 3,800,432.

Ogirima, Masahiko: *See*—
Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, 3,801,509.

Ogura, Hirukatsu; Takizawa, Tatsuo; Ono, Yoshizo; and Taketsume, Yukuo, to Denki Kagaku Kogyo Kabushiki Kaisha. Expansive additive for lime cement and process for the preparation of the same. 3,801,339, Cl. 106-97.000.

Ohi, Reiichi: *See*—
Shirasu, Kazuo; Amano, Hiroyuki; and Ohi, Reiichi, 3,801,322.

Ohkawa, Tihiro, to United States of America, Atomic Energy Commission, mesne. Toroidal apparatus for confining plasma. 3,801,438, Cl. 176-3.000.

Ohkubo, Kinji: *See*—
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,801,323.

Ohnsorge, Horst. Fiber optic information transmission system. 3,801,819, Cl. 250-199.000.

Oishi, Hisashi: *See*—
Minatodani, Shinichi; and Oishi, Hisashi, 3,800,449.

Oka, Masahiko: *See*—
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Okabe, Takahiro: *See*—
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.

Okada, Masahiro: *See*—
Nishiyori, Kyutaro; and Okada, Masahiro, 3,800,648.

Okajima, Yasunaru: *See*—
Furuuchi, Shigemasa; Nishihara, Akira; Okajima, Yasunaru; and Kamimori, Tadatoshi, 3,801,352.

Okaya, Tsutomu: *See*—
Ozawa, Goro; Kosaka, Kenzo; Kobayashi, Hideo; Adachi, Kiyoshi; and Okaya, Tsutomu, 3,800,374.

Oktronics, Inc.: *See*—
Davenport, Raymond A., 3,801,891.

Okuhara, Akira; Nakajima, Takashi; and Saito, Nobuo, to Kikkoman Shoyu Co., Ltd. Electrolytic apparatus for decolorizing food. 3,801,488, Cl. 204-252.000.

Okumura, Shinji: *See*—
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,801,456.

Okuno, Ryuzo; and Fujii, Hiroo, to Kawasaki Jukogyo Kabushiki Kaisha. Furnace having a combustion pressure elevating device. 3,801,267, Cl. 432-171.000.

Olday, Fred L. Attachment for fur sewing machines. 3,800,717, Cl. 112-20.000.

Olderdissen, Ulrich: *See*—
Keller, Guenter; and Olderdissen, Ulrich, 3,801,965.

Oliphant, James Millard: *See*—
Palfi, Thomas Laszlo; and Oliphant, James Millard, 3,801,964.

Oliver Machinery Company: *See*—
Solomon, William H., 3,800,500.

Olson, Lloyd J., to Chevron Research Company. Catalyst and preparation method for said catalyst. 3,801,515, Cl. 252-453.000.

Olstowski, Franciszek. Rapid-setting polyurethanes from diols and polyfunctional isocyanates. 3,801,532, Cl. 260-33.8ub.

Omonishi, Shitomo, to Toyo Kogyo Co., Ltd. Apparatus for cutting side seal grooves in rotors of rotary piston engine. 3,800,661, Cl. 90-31.000.

Onarheim, Thor; and Solberg, Per, to Stord Bartz Industri A/S. Heat exchanges. 3,800,865, Cl. 165-92.000.

Ono, Yoshizo: *See*—
Ogura, Hirukatsu; Takizawa, Tatsuo; Ono, Yoshizo; and Taketsume, Yukuo, 3,801,339.

Onoda, Takiko: *See*—
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,801,456.

Onoe, Katsuhiko; and Tanaka, Mitsuyoshi, to Glory Kogyo Kabushiki Kaisha. Sheet-separating device in sheet counter used for a sheet counting mechanism. 3,801,777, Cl. 235-98.00r.

Optasound Corporation: *See*—
Castagna, John Frank, 3,800,562.
Lawson, Peter, 3,801,191.

Orb, Inc.: *See*—
Wisofsky, Serge S., 3,800,548.

Ordinartsev, Jury Nikolaevich: *See*—
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Ilikhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.

Ordinartsev, Vladimir Nikolaevich: *See*—
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Ilikhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.

Orimoto, Tadashi: *See*—
Takeuchi, Tetsuo; and Orimoto, Tadashi, 3,800,980.

Oroschakoff, Georgi. Reinforcement for reinforced-concrete structures. 3,800,492, Cl. 52-662.000.

Orozco, Enrique H.: *See*—
Khambatta, Sarosh M.; and Asimor, Brian L., 3,800,383.

Osborn, Claiborn Lee: *See*—
Sandner, Michael Ray; and Osborn, Claiborn Lee, 3,801,329.

Osborne, William C., to Goulds Pumps, Incorporated. Axial thrust limiting device. 3,801,215, Cl. 415-131.000.

Ostapchuk, Jury Grigorievich: *See*—
Yavorsky, Arsenty Vasilievich; Tkachuk, Rostislav Arsentievich; Ostapchuk, Jury Grigorievich; Farber, Grigory Lvovich; Bondar, Viktor Stepanovich; and Pryalochnikov, Gennady Vasilievich, 3,801,238.

Ostuni, Joseph J.; and Vincent, Floyd O., to Magnavox Company, The. Method and apparatus for converting electrical signals. 3,801,915, Cl. 325-453.000.

Otsuka, Katsuhiko; and Katayama Takao, to Tokyo Gas Co., Ltd. Air supply and exhaust duct system in a building. 3,800,686, Cl. 98-32.000.

Otto, C., Dr., & Comp., G.m.b.H.: *See*—
Schoen, Erich; Drebes, Friedrich; and Birresborn, Gunter, 3,801,473.

Otto, Gottfried: *See*—
Donath, Hans; Beier, Hans-Peter; Otto, Gottfried; Mutz, Werner; and Tausch, Winfried, 3,801,146.

Ouaknine, Gilbert. Orthodontic dilator. 3,800,420, Cl. 32-14.00e.

Ouyang, Mid: *See*—
Nakata, Roy; Ouyang, Mid; and Starr, Wendell T., 3,801,730.

Oval Kiki Kogyo Kabushiki Kaisha: *See*—
Yamamoto, Ichizo; and Fujii, Hiroshi, 3,800,982.

Owens-Corning Fiberglas Corporation: *See*—
Sears, James H.; and Jones, Bernard H., 3,801,032.

Owens-Illinois, Inc.: *See*—
Dietz, Earl D., 3,801,344.
Heyne, Clarence A., 3,800,344.
Kitaj, Walter, 3,801,361.
Petty, William D.; and Liddle, David E., 3,801,861.

Ozawa, Goro; Kosaka, Kenzo; Kobayashi, Hideo; Adachi, Kiyoshi; and Okaya, Tsutomu. Method for producing bulky yarn. 3,800,374, Cl. 28-72.140.

Pace, Gerald F.; and Shortridge, Earl W., to Continental Oil Company. Static leaching process. 3,801,694, Cl. 423-20.000.

Packaging Corporation: *See*—
Thelen, Edmund J., 3,801,012.

Pahl, Dietrich, to NASSOUIA Werkzeugmaschinenfabrik GmbH. Device for adjusting the working gap between the work piece and tool electrodes during an electrochemical machining operation. 3,801,487, Cl. 204-224.00m.

Palfi, Thomas L.: *See*—
Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., 3,801,836.

Palfi, Thomas Laszlo; and Oliphant, James Millard, to Advanced Memory Systems Inc. Semiconductor memory with address decoding. 3,801,964, Cl. 340-173.00r.

Palmen, Otto, to Albrecht, W., KG. Method of manufacturing base terminals of a miniature incandescent light bulb. 3,800,377, Cl. 29-25.130.

Palmquist, Philip V.: *See*—
Sevelin, Charles V.; and Palmquist, Philip V., 3,801,183.

Paluch, Bernard R. Carbon dioxide absorber. 3,800,516, Cl. 55-354.000.

Palumbo, Vincent F.; Rivers, Russell C.; and Horner, Jack G. Fishing light. 3,801,812, Cl. 240-52.00r.

Panokraft Corporation of Canada Limited, mesne: *See*—
Yates, Herbert G., 3,800,485.

Papasideris, Stamos I.: *See*—
Blomstrom, Gary D.; Butler, Carl T.; Kostas, James M.; May, Czeslaw J.; Nesbit, Robert D.; and Papasideris, Stamos I., 3,800,901.

Papiau, Guy, to Societe Anonyme D.B.A. Double master cylinder. 3,800,540, Cl. 60-581.000.

Papp, Laszlo: *See*—
Kiszel, Janos; and Papp, Laszlo, 3,800,784.

Paratronic AG: *See*—
Szasz, Imre, 3,801,900.

Parish, Roger C.; and Trei, John E., to Smithkline Corporation. Methods and compositions for improving feed efficiency of ruminants using haloaldehyde sulfonates and phosphonates. 3,801,710, Cl. 424-222.000.

Parker, Fred Walter, to Du Pont de Nemours, E. I., and Company. Entropically stabilized water base dispersions. 3,801,524, Cl. 260-29.6wb.

Parker, Gordon J. Fish trap. 3,800,464, Cl. 43-100.000.

Parker, Winfred E.: *See*—
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,801,609.

Parker-Hannifin Corporation: *See*—
Jackson, Daniel B., 3,801,113.

Parkyn, John Michael, to Morconi Instruments Limited. Frequency synchronisers. 3,801,925, Cl. 331-1.00a.

Parrish, Douglas R.; and Parrish, Richard A., to Parrish's Cake Decorating Supplies, Inc. Universal coupler for cake icing decorating tubes. 3,801,247, Cl. 425-191.000.

Parrish, Richard A.: *See*—
Parrish, Douglas R.; and Parrish, Richard A., 3,801,247.

Parrish, Wilbert J., to United States Register Company. Method and apparatus for pivotally mounting fluid deflection blades. 3,800,688, Cl. 98-107.000.

Parrish's Cake Decorating Supplies, Inc.: *See*—
Parrish, Douglas R.; and Parrish, Richard A., 3,801,247.

Parsons, John T.; and Goodland, Donald E., to Grass, Jerome A. Controllable pitch mariropeller. 3,801,219, Cl. 416-157.000.

Pasedach, Heinrich; Bittler, Knut; Francke, Dilihard; and Hoffmann, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of acetylene monoalcohols. 3,801,653, Cl. 260-617.00e.

Patents and Developments A/S: *See*—
Iveit, Oyvind, 3,800,831.

Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich. Electron eam melting installation. 3,800,850, Cl. 164-250.000.

Pattas, Konstantin: *See*—
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,800,526.

Patterson, William C. Traction arrangement for angularly rotatable sweep auger of circulator grain bins. 3,800,964, Cl. 214-17.0da.

Paul, Keith Thomas; Gale, George Martin; and Humpidge, Richard Thomas. Apparatus for determining the processing characteristics of plastic type materials. 3,800,597, Cl. 73-59.000.

Pauldan Industries, Inc.: *See*—
Jaffe, Paul E., 3,800,812.

Pauler, Horst: *See*—
Scheel, Joachim; and Pauler, Horst, 3,801,392.

Pauli, Otto: *See*—
Paulus, Wilfried; Hamburger, Brigitte; and Pauli, Otto, 3,801,576.

Paulus, Wilfried; Hamburger, Brigitte; and Pauli, Otto, to Bayer Aktiengesellschaft. Aroyl-ethyl-hexaminium salts. 3,801,576, Cl. 260-248.500.

Pavone, Harry: *See*—
Barron, George E.; and Pavone, Harry, 3,800,965.

Payot, Pierre H.; and Gatzi, Karl, to Ciba-Geigy Corporation. Quaternary ammonium salts. 3,801,641, Cl. 260-567.60m.

Peake, Ernest R.: *See*—
Grangaard, Orrin H.; and Peake, Ernest R., 3,801,858.

Pearson, Daniel, to Grace, W. R., & Company. Method of wrapping a confectionary. 3,800,497, Cl. 53-14.000.

Pearson, George. Humidifying apparatus. 3,801,077, Cl. 261-139.000.

Pease, James F. Method of producing an electrical heating element and fitting assembly. 3,800,415, Cl. 29-611.000.

Pease, Logan L.; and Huggins, Robert W., Jr., to Eaton Corporation. Photocoupling line isolation. 3,801,837, Cl. 307-311.000.

Peifer, Gary S.: *See*—
Beals, Duane L.; and Peifer, Gary S., 3,800,903.

Pelte, Richard; Huber, Theo; and Mayr, Helmut, to Agfa-Gevaert Aktiengesellschaft. Fade-in and fade-out arrangement for movie cameras. 3,801,194, Cl. 352-91.000.

Pemberton, Robert Tudor: *See*—
Tims, Thomas William; and Pemberton, Robert Tudor, 3,801,152.

Pentegov, Igor Valerianovich: *See*—
Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich, 3,801,718.

Peot, Craig B.: *See*—
Shah, Ashok C.; and Peot, Craig B., 3,801,280.

Perkin-Elmer Corporation, The: *See*—
Manning, David C.; and Fernandez, Frank J., 3,801,282.

Perkins, Glen E. Pavement grooving process and apparatus. 3,801,211, Cl. 404-75.000.

Perret, Louis, III. Handlebar bicycle lock. 3,800,575, Cl. 70-233.000.

Perronnet, Jacques; and Girault, Pierre, to Roussel-UCLAF. Herbicidal method. 3,801,302, Cl. 71-121.000.

Perry, Raymond D.: *See*—
Holder, James H., 3,800,460.

Petchell, Roy Kenneth: *See*—
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,801,468.

Peters, Burton, Jr.; Nowak, Leonard J.; and Nolte, George J., to Zurn Industries, Inc. Ball valve. 3,801,065, Cl. 251-315.000.

Peters, Werner: *See*—
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,801,513.

Petersen, Harro; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of textile finishing agents comprising condensing urea and HCHO followed by condensation with glyoxal. 3,801,546, Cl. 26069.00r.

Petersen, Niel R.: *See*—
Larson, Rodney L.; and Petersen, Niel R., 3,800,588.

Petrini, Guido; Moreschini, Luciano; Marciandi, Franco; and Faletti, Franco, to Montecatini Edison S.p.A. Process for preparing unsaturated nitriles by catalytic ammoxidation of saturated aldehydes in the gas phase. 3,801,621, Cl. 260-465.900.

Petro-Tex Chemical Corporation: *See*—
Bajars, Laimonis, 3,801,672.
Christmann, Harold F., 3,801,669.
Taylor, William H., 3,801,475.

Petrocelli, Marcello. Sculpture device. 3,800,442, Cl. 35-28.000.

Petty, William D.; and Liddle, David E., to Owens-Illinois, Inc. Drive waveform for gas discharge display/memory panel. 3,801,861, Cl. 315-169.0tv.

Pezzani, Guido: *See*—
Ryall, Michael Leslie; Anderson, Harold Henry; and Pezzani, Guido, 3,801,217.

Pfister, Jorg R.; Harrison, Ian T.; and Fried, John H., to Syntex Corporation. Substituted xanthone carboxylic acid compounds. 3,801,598, Cl. 260-335.000.

Phelan, Charles Stephens, to Rohe Scientific Corporation. Sampler and Diluter. 3,800,984, Cl. 23-259.000.

Phelpstead, James W. P.: *See*—
Horsewell, Harry G.; Phelpstead, James W. P.; and Brooks, Geoffrey O., 3,800,805.

Philippi, Marvin A.; and Whitcomb, Harry W. Displacement measuring apparatus. 3,801,781, Cl. 250-231.00r.
Phillips, Clayton L.; and Switzer, Don R. Tubing testing methods. 3,800,596, Cl. 73-40.50r.
Phillips, Peter Harold, to Plessey Handel und Investments A.G. Coil winding. 3,801,941, Cl. 335-210.000.
Phillips Petroleum Company: *See*—
Blackwell, Jennings P., 3,801,379.
Draper, Homer L.; and Gagle, Duane W., 3,801,341.
Gilbert, Dixie E., 3,801,690.
Hitzman, Donald O., 3,801,502.
Hogan, John Paul; Kitchen, Alonzo G.; and Kahle, Gerald R., 3,801,520.
Marsheck, Robert M., 3,801,671.
Scoggin, Jack S., 3,800,845.
Selman, Charles M., 3,801,554.
Williams, Ralph P., 3,801,548.
Phillips, Reginald Andrew, to Dobson Park Industries Limited. Impact tools or apparatus. 3,800,664, Cl. 91-165.000.
Piasecki Aircraft Corporation: *See*—
Piasecki, Frank N., 3,801,070.
Piasecki, Frank N., to Piasecki Aircraft Corporation. Hoist system. 3,801,070, Cl. 254-144.000.
Pickelman, Dale M.: *See*—
Moore, Eugene R.; Smith, Linton E., III; and Pickelman, Dale M., 3,801,549.
Picker Corporation: *See*—
Neuhaus, Theodore G., 3,801,786.
Piepers, Gijsbrecht Gerhardus; Vons, Leonard Hendrik; van der Linde, Aart; and Ljbrink, Eduard, to Reactor Centrum Nederland. Spacer grid respectively plate spring for a bunch of cylindrical elements taking part in a heat-exchanging-process. 3,801,088, Cl.267-164.000.
Pierce, Howard E.: *See*—
Arn, Fred A.; Dowicki, William J.; and Pierce, Howard E., 3,801,062.
Pierce, Howard H. Ski ensemble. 3,801,117, Cl. 280-11.13k.
Piersma, Leonardus Jacovus; and Siemes, Albertus Frederikus, to N.V. Rubberfabriek Vraderstein. Method and apparatus for manufacturing tire inner tubes with air valves, and tire inner tubes with air valve manufactured by application of the method. 3,801,39, Cl. 156-120.000.
Pieters, Ferdinandus A.: *See*—
Martin, Thomas B.; and Pieters, Ferdinandus A., 3,801,241.
Pietrass, Hansgeorg: *See*—
Berger, Horst Heinz; Najmann, Knut; Pietrass, Hansgeorg; and Wiedmann, Siegfried, 3,801,967.
Piffath, Rodney S.; and Cole, John J., to International Fire Tool Corporation. LPG valve assembly. 3,800,979, Cl. 220-89.00a.
Pilch, John S., to Ware Machine Works, Inc. Single lever control mechanism. 3,800,615, Cl. 74-471.0xy.
Pilot Research Corporation, mesne: *See*—
Carswell, Theodore R., 3,800,564.
Piret, Jacques: *See*—
Nilles, Paul Emile; and Piret, Jacques, 3,801,305.
Piret, Jean, to Automobiles Peugoet and Regie Nationale des Usines Renault. Hydraulic system for controlling a gearbox. 3,800,628, Cl. 74-864.000.
Pitts, Robert W., Jr., to Texaco Inc. Formation testing tool. 3,800,870, Cl. 166-65.00r.
Pittsburgh Corning Corporation: *See*—
Castellucci, Nicholas T.; and Krouskop, Ned C., 3,801,474.
Placek, Eugene W., to Van Dorn Company. Railway car thawing system. 3,800,858, Cl. 165-1.000.
Planck, Alfred, Jr.: *See*—
Beuter, Hermann; and Planck, Alfred, Jr., 3,800,561.
Plate, Geerardus G.; and Van Hattem, Nicolaas. Sealing cutting mechanism. 3,801,409, Cl. 156-515.000.
Pless, Janos: *See*—
Guttmann, Stephan; Pless, Janos; and Bossert, Heinz, 3,801,561.
Plessey Handel und Investments A.G.: *See*—
Phillips, Peter Harold, 3,801,941.
Pleus, Edwin F.; and Mietzel, Dennis O. Machine for continuously filling containers. 3,800,837, Cl. 141-131.000.
Plotz, Robert G. Shower head. 3,801,018, Cl. 239-316.000.
Plovan, Steven G.: *See*—
Droin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,801,404.
Plumat, Emile: *See*—
Brichard, Edgar; Jaupain, Maurice; Plumat, Emile; and Deschepper, Pierre, 3,800,983.
Pniewski, Gary A., to Ford Motor Company. Nonreversible odometer. 3,801,005, Cl. 235-95.00r.
Poettmann, Fred H.: *See*—
Kelly, Joe T.; and Poettmann, Fred H., 3,800,873.
Poffenberger, James C., to Preformed Line Products Company. Method for making appliance for linear bodies. 3,800,397, Cl. 29-416.000.
Poignant, Jean-Claude: *See*—
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,801,628.
Poitras, Edward J. Release mechanism for pressurized vessels. 3,800,878, Cl. 169-20.000.
Polaroid Corporation: *See*—
Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., 3,801,318.
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, to American Cyanamid Company. Substituted heteroethyleneindoles and acid addition salts thereof. 3,801,594, Cl. 260-326.150.
Polise, Joseph C.: *See*—
Vogt, Clifford M.; Soehngen, John W.; and Polise, Joseph C., 3,801,400.
Polizzano, Fred F.; Smith, Stanton M.; and Swiatovy, Edward S., to General Cable Corporation. Impregnation of communication cables with solid filling compound. 3,801,359, Cl. 117-115.000.
Poll, Everett Lewis: *See*—
Lynn, Dale Everett; and Poll, Everett Lewis, 3,801,828.
Ponomozenro, Leonid Petzovich: *See*—
Bazhal, Anatoly Ignatievich; and Ponomozenro, Leonid Petzovich, 3,800,886.
Ponter, Robert J., to Ritter Engineering Company. Pulse motor control system. 3,800,667, Cl. 91-380.000.
Poole, Thomas J.: *See*—
Sokolski, Michael; and Poole, Thomas J., 3,800,439.
Popescu, Constantin: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Popov, Viktor Andreevich: *See*—
Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich, 3,801,718.
Popovitsch, Ernst, to Nagele, Karl, F., Dr., Feinmaschinenbau. Sliding clasp fastener. 3,800,367, Cl. 24-205.100.
Poritz, Nathan. Ball point pen structure. 3,801,206, Cl. 401-29.000.
Portal, Pierre, to Societe Anonyme des Forges de Bologne. Machine for polishing a surface, particularly the surface of a spool flange. 3,800,475, Cl. 51-62.000.
Porter, Clyde Robert: *See*—
Sember, Joseph Alexander; and Porter, Clyde Robert, 3,800,674.
Porter, Harold Felton; Rennie, Foster Wilson; and Williamson, Addison Heaton, to Du Pont de Nemours, E. I., and Company. Sink-float liquid contacting of solids. 3,801,370, Cl. 134-25.00r.
Porter, P. L., Co.: *See*—
Sember, Joseph Alexander; and Porter, Clyde Robert, 3,800,674.
Portinari, Giovanni; Giovanni, Sesto San; and Brovedan, Antonio, to Industrie Pirelli Societa per Azioni. Armored submarine electric power cable with a plurality of grounding devices for a layer thereof. 3,801,729, Cl. 174-106.00r.
Postal, Robert Harrison, to American Cyanamid Company. Non-conflicting double image photographic film employing silver based and photofluorescer compounds. 3,801,324, Cl. 96-82.000.
Potoceanu, Ion: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Potter, Richard C., to Shell Oil Company. Block copolymer-polyvinyl chloride compositions. 3,801,529, Cl. 260-30.60r.
Potts, James Rowland: *See*—
Eildes, Robert Anthony; Potts, James Rowland; and Farthing, John Eaton, 3,801,458.
Potts, Ronald G.; and Word, Clinton E. Board game apparatus. 3,801,104, Cl. 273-134.0ae.
Pouit, Robert Jean. Supercharged four stroke internal combustion engine. 3,800,763, Cl. 123-119.00c.
Powell, John E., to Mandrel Industries, Inc. Can sorter. 3,800,941, Cl. 209-74.00r.
Power, Basil Dixon, to British Oxygen Company Limited, The. Vacuum pumps. 3,801,225, Cl. 417-153.000.
PPG Industries, Inc.: *See*—
Grove, Robert H.; De Torre, Robert P.; and Dahlberg, John R., 3,800,991.
Welch, Cletus N., 3,801,490.
Pratt, Roy E.: *See*—
Youngblood, Douglas J.; Kuhlmann, Robert E.; and Pratt, Roy E., 3,801,493.
Pray, Lawrence H., to Formsprag Company. Positive lubrication hydraulic disc clutch. 3,800,928, Cl. 192-85.0ac.
Prechtel, Klaus, to Voith, J. M., GmbH. Fibrous web forming machine with white water recirculating arrangement. 3,801,436, Cl. 162-252.000.
Precision Control Products Corporation: *See*—
Kilayko, Enrique Locsin, 3,801,232.
Precision Metalsmiths, Inc.: *See*—
Coghill, Timothy L., 3,800,851.
Preformed Line Products Company: *See*—
Poffenberger, James C., 3,800,397.
Prent Corporation: *See*—
Gask, Bryan R., 3,800,998.
Preston, Clare A. Rotary snow thrower. 3,800,448, Cl. 37-43.00a.
Preston Lock Company; division of Walter Kidde & Company, Inc.: *See*—
Heine, Henry, 3,800,571.
Preuss, Ernest A.: *See*—
Sharpe, Louis F.; and Preuss, Ernest A., 3,801,821.
Pribish, Bernard A.: *See*—

Morse, Donald B.; and Pribish, Bernard A., 3,800,647.

Price, George McNair: *See—*
Moore, Lewis Frank; and Price, George McNair, 3,800,779.

Procter & Gamble Company, The: *See—*
Lemoff, Theodore C., 3,801,511.

Proctor-Silex Incorporated: *See—*
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr., 3,800,691.

Production Technology, Inc.: *See—*
Franks, Douglas G. K.; and Sage, Ira H., 3,800,995.
Fuller, Francis W.; and Kiwalle, Jozef, 3,800,996.

Properzi, Ilario. Cooling device for continuous casting machine. 3,800,852, Cl. 164-278.000.

Pryalochnikov, Gennady Vasilievich: *See—*
Yavorsky, Arsenty Vasilievich; Tkachuk, Rostislav Arsentievich; Ostapchuk, Jury Grigorievich; Farber, Grigory Lvovich; Bondar, Viktor Stepanovich; and Pryalochnikov, Gennady Vasilievich, 3,801,238.

Puchner, William R., to Charter Manufacturing Company, Inc. Method of assembling and using a prearranged fastening element package. 3,800,396, Cl. 29-413.000.

Pudliner, Richard A., to Western Electric Company, Incorporated. Emitter block assembly. 3,801,719, Cl. 13-31.000.

Pulfer AG: *See—*
Eggenschwyler, Eduard A., 3,801,205.

Pullman Incorporated: *See—*
Nagy, Ernest J., 3,800,472.
Stark, Marvin; Jones Jerry L.; Tuck, Richard L., Sr.; and Aquino, Herman A., 3,800,714.
Tuttle, James H., 3,800,711.

Pulsepower Systems Incorporated: *See—*
Broxholm, Thomas M.; and Elmore, Lester C., 3,800,657.

Purdue Frederich Company, The: *See—*
Swimm, Walter Thomas, 3,801,613.

Purpura, Paul: *See—*
Hall, Gilbert D.; and Purpura, Paul, 3,800,494.

Putman, Richard E.; and Carleton, James T., to Westinghouse Electric Corporation. Dryer control and grade change system for a paper machine. 3,801,426, Cl. 162-198.000.

Pye, Donald George, to Du Pont de Nemours, E. I., and Company. Magnetic recording member comprising alumina coated CrO_x particles. 3,801,510, Cl. 252-62.540.

Queffeulou, Jean-Yves; and Vautrin, Gerard C. Speech detector for PCM-TASI system. 3,801,747, Cl. 179-15.0as.

Quercetti, Alessandro. Sailplane. 3,801,052, Cl. 244-153.00r.

Quick, Robert G., to Hy-Rider Inc. Travel home with car-top hitch. 3,801,138, Cl. 280-478.00r.

Quigley, John B.: *See—*
Lohr, Raymond J.; and Quigley, John B., 3,801,102.

Quilico, Adolfo: *See—*
Minisci, Prancesco; Bertini, Franco; Galli, Remo; and Quilico, Adolfo, 3,801,580.

Quinn, Hubert F., to International Business Machines Corporation. Externally accessing mechanical difficult to access circuit nodes using photo-responsive conductors in integrated circuits. 3,801,910, Cl. 324-158.00d.

Quinn, James L. Control for well pump. 3,801,889, Cl. 318-481.000.

Quintilian, Bartholomew Frank, to Koppers Company, Inc. Plate production system with low level bundling, stacking, and transport. 3,800,404, Cl. 29-469.000.

Quoos, Kurt: *See—*
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,800,568.

Raatz, Helmuth E.; and Melzer, Eugene, to Continental Can Company, Inc. Cap feeding apparatus. 3,800,501, Cl. 53-315.000.

Racunas, Bernard J.; and Minick, John R., to Aluminum Company of America. Structure and method for separating insoluble particles from a molten bath. 3,801,003, Cl. 233-3.000.

Radd, Frederick J.; Oertle, Donald H.; and Wolee, Louis H., to Continental Oil Company. Rotating hub assembly for a mining cutter bit. 3,801,158, Cl. 299-86.000.

Raddatz, Gene R.: *See—*
Kemmerer, Wayne J.; Dicola, Vincent C.; and Raddatz, Gene R., 3,801,951.

Radiation Development Co., Ltd.: *See—*
Free, David, 3,801,432.

Radiki, Volker: *See—*
Scheurermann, Horst; Mach, Wolfgang; and Radiki, Volker, 3,801,602.

Radscheit, Kurt: *See—*
Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,801,570.

Ragsdale, Robert Gordon, to Milgo Electronic Corporation. Frequency modulation communication system and digital carrier generator and demodulator for use therein. 3,801,912, Cl. 325-30.000.

Rahman, Abdul R.: *See—*
Shipman, John W.; and Rahman, Abdul R., 3,801,714.

Raidel, John E. Vehicle air spring suspension assembly. 3,801,086, Cl. 267-17.000.

Rain Jet Corporation: *See—*
Hruby, John O., Jr., 3,801,010.

Rakaoawa, Shinichi: *See—*
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Rampe, John F.; and Ward, William E., to Rampe Research. Vibratory finishing machine with screening and loading mechanism. 3,800,478, Cl. 51-163.000.

Rampe Research: *See—*
Rampe, John F.; and Ward, William E., 3,800,478.

Ramsay, Joseph D.; and Weaver, George R., to Campbell Soup Company. Weighing apparatus and method. 3,800,893, Cl. 177-25.000.

Ranco Incorporated: *See—*
Heiser, E. Franklin; and Kulick, Andrew, 3,801,948.

Randolph, Jack R.: *See—*
Gregory, Joseph J.; and Randolph, Jack R., 3,801,369.

Raoulz, Jean, to Nebb, Jervis B., International Company. Stopping stations of a pwer and free conveyor. 3,800,710, Cl. 104-251.000.

Rapson, William J., Jr.: *See—*
Delatorre, Leroy C.; Rapson, William J., Jr.; and Lemson, Paul H., 3,800,586.

Rasch, Arthur A.; and Cowden, Herbert B., to Eastman Kodak Company. Photographic article with anti-static metal halide layer system of reducible optical density. 3,801,325, Cl. 96-87.00a.

Ratajczak, Ernst-Albert: *See—*
Ahland, Erwin; and Ratajczak, Ernst-Albert, 3,800,428.

Rattner, Manfred: *See—*
Gotzl, Horst; and Rattner, Manfred, 3,801,790.

Rauch, Francis Clyde: *See—*
Fanelli, Anthony Joseph; Blank, Gerlinde Metzler; and Rauch, Francis Clyde, 3,801,639.

Rausch, John J.: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,801,381.

Rausch, Richard E., to Universal Oil Products Company. Tetrametallic hydrocarbon conversion catalyst and uses thereof. 3,801,498, Cl. 208-139.000.

Ravasz, Akos: *See—*
Schrewe, Klaus; Knipp, Ullrich; and Ravasz, Akos, 3,801,684.

Raybestos-Manhattan, Inc.: *See—*
Dunkin, Albert, 3,800,348.

Raymond, Rodney L., to United States of America. Trapped atmosphere closure assembly. 3,800,972, Cl. 220-44.00r.

Raytheon Company: *See—*
Barrett, Harrison H., 3,801,785.
Hapgood, William H., 3,800,747.

RCA Corporation: *See—*
Griepentrog, Dal Frank; and Gries, Robert Joseph, 3,801,856.
Larrabee, Robert Dean, 3,801,949.
Lee, Robert Arthur; and Bazarian, Albert, Jr., 3,800,378.
Luz, David Warren, 3,801,857.
Ronen, Ram Shaul; and James, Edward Anthony, 3,801,477.
Sanderson, Robert Arthur, 3,801,033.
Webb, George Wendell, 3,801,378.
West, Clarence Austin, 3,801,892.

RCA Limited: *See—*
Teare, Melvin John, 3,801,933.

Rea, Harry L. Fish and crab trap. 3,800,465, Cl. 43-105.000.

Reactor Centrum Nederland: *See—*
Piepers, Gijsbrecht Gerhardus; Vons, Leonard Hendrik; van der Linde, Aart; and Ljbrink, Eduard, 3,801,088.

Rebres, Robert P.: *See—*
Knapp, Lowell W.; and Rebres, Robert P., 3,801,196.

Reck, Lothar: *See—*
Lamprecht, Rudolf; and Reck, Lothar, 3,800,355.

Reddy, Jonothula N., to Bendix Corporation, The. Method and apparatus for providing a nonlinear pressure transducer output signal. 3,800,750, Cl. 123-32.0ea.

Reed, Martin C.: *See—*
Kolomayets, George; and Reed, Martin C., 3,801,109.

Reed, Robert D.; and Schwartz, Robert E., to Zink, John Company. Opti-netic flare. 3,801,261, Cl. 431-202.000.

Reedy, Delbert R.: *See—*
Knapp, Karl K.; and Reedy, Delbert R., 3,800,554.

Reese, Gerald D.: *See—*
Carlson, Lowell D.; Reese, Gerald D.; and Shank, Gerald G., 3,800,754.

Reeves, James J. Method and apparatus for scrambled television. 3,801,732, Cl. 178-5.100.

Regalos, Promociones y Serviceos, S.A.: *See—*
Soubrier, Juan Gomez, 3,801,105.

Regel, Erik: *See—*
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., 3,801,590.

Regie Nationale des Usines Renault: *See—*
Piret, Jean, 3,800,628.
Sigwald, Jacques, 3,800,978.

Rehmus, Frederick H.: *See—*
Mizikar, Eugene A.; and Rehmus, Frederick H., 3,800,856.

Reichel, Erika; and Gatzi, Karl, to Ciba-Geigy Corporation. 3-Carbamoyloximino-azacycloheptan-2-ones and process for their production. 3,801,571, Cl. 260-239.30r.

Reid, Charles M.; and Ronellenfitch, Bernard M., to Elast-O-Cor Products & Engineering Limited. Hydrocyclones. 3,800,946, Cl. 210-84.000.

Reid, Robert V.; and White, Charles E., to Ford Motor Company. Spare wheel lock assembly. 3,800,574, Cl. 70-231.000.

Reimann, Gerhard Paul. Automobile body structure incorporating hinged housing. 3,801,149, Cl. 296-23.00r.

Reinhold, Donald F.; Sletzinger, Meyer; and Firestone, Raymond A., to Merck & Co., Inc. 2-Acylamido-2-(3,4-methylenedioxybenzyl-3-hydroxy-propionitrile compounds. 3,801,601, Cl. 260-340.500.

Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., to Carter-Wallace, Inc. Oxazinoquinazolinones. 3,801,574, Cl. 260-244.00r.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,801,628.

Renaud, Alain P. Fluid injection device. 3,801,013, Cl. 239-61.000.

Renfrew, Edgar Earl; and Zanella, Dominic Andrew, to American Aniline Products, Inc. Yellow polyester fabric material and dyeing process therefor. 3,801,270, Cl. 8-41.00c.

Renkl, Hans-Dieter, to Deutsche Acheson GmbH. Apparatus for producing hollow glass objects. 3,801,299, Cl. 65-169.000.

Rennie, Foster Wilson: *See—*
Porter, Harold Felton; Rennie, Foster Wilson; and Williamson, Addison Heaton, 3,801,370.

Renshaw, John L., Inc.: *See—*
Keller, James Paul, 3,801,140.

Research Corporation: *See—*
Wittry, David B., 3,801,784.

Ressorts du Nord S.A.: *See—*
Lemaire, Bernard J., 3,801,080.

Restel, Michael F. Glass cutter. 3,800,639, Cl. 83-9.000.

Resz, Raoul: *See—*
Striegler, Hellmut; Resz, Raoul; and Bartl, Herbert, 3,801,428.

Rethmeier, Gerhard: *See—*
Michaelis, Heinz; Rethmeier, Gerhard; and Schmieder, Fritz, 3,801,774.

Reuss, Guenter: *See—*
Petersen, Harro; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,801,546.

Reuters Limited: *See—*
Coombe, Thomas R., 3,801,961.

Revroth, G. L., GmbH: *See—*
Distler, Josef, 3,800,669.

Rey, Maurice; and Formanek, Victor, 1/2 to "Le Nickel" and 1/2 to Societe Miniere et Metallurgioue de Penarroya. Method for the recovery of nickel from mixed ores. 3,801,306, Cl. 75-82.000.

Reynolds, Martin Lance; and Hammersmith, James R., to Brown & Williamson Tobacco Corporation. Tobacco smoke filter. 3,800,808, Cl. 131-267.000.

Reynolds, Roy; and Neill, William T., to Applied Power Inc. Double-acting lift cylinder with integral velocity fuses. 3,801,151, Cl. 296-28.00c.

Reynolds, Stuart Arthur; and Story, Hugh Goodman, to S.A. Texaco Belgium N.V. Floating roof tank level alarm. 3,800,911, Cl. 182-18.000.

Rhodes, Joseph C.; and Ginsburgh, Irwin, to Standard Oil Company. Apparatus and method for fueling an internal combustion engine. 3,800,768, Cl. 123-133.000.

Riccius, Rolf, to Vereinigte Flugtechnische Werk-Fokker, GmbH. Method for reducing drag of vertical takeoff type aircraft. 3,801,048, Cl. 244-42.0cc.

Rice, Richard L.: *See—*
Berber, John S.; and Rice, Richard L., 3,801,342.

Richard, Kenneth L.: *See—*
Eaton, John L., Jr.; Richard, Kenneth L.; and Schwartz, Walter M., Jr., 3,800,691.

Richardson, William B. Collapsible container for auto trunk. 3,800,990, Cl. 224-42.42r.

Richmond, Martin R., to Sanders Associates, Inc. Post storage range and doppler correlation method and apparatus. 3,801,982, Cl. 343-9.000.

Richwine, John R., to Hercules Incorporated. Reduction of corrosivity of halogen containing polymer vulcanizates. 3,801,517, Cl. 260-2.00a.

Ricoh Co., Ltd.: *See—*
Kato, Tadashi, 3,801,057.
Komura, Yasuyuki; Hirata, Shinichi; Fukushima, Takashi; and Ogawa, Mutsuo, 3,801,737.

Riesbeck, Laverne J.; and Blackwell, Willis A. Stackable sieve. 3,800,943, Cl. 209-237.000.

Rieter Machine Works, Ltd.: *See—*
Schiltknecht, Adolf, 3,800,520.
Wust, Olivier, 3,801,038.

Riggs & Lombard, Inc.: *See—*
Wilcox, Harold R., 3,800,569.

Riha, Miloslav; Vystrcil, Karel; Cernocky, Jiri; and Zgarda, Milan, to Zbrojovka Vsetin, narodni podnik. Apparatus for stretching a fabric. 3,800,835, Cl. 139-291.00r.

Rike, James L. Sand consolidation by adhesive agent and particulate pack. 3,800,847, Cl. 166-295.000.

Rike, Russell E., to Dayton Steel Foundry Company, The. Disc brake caliper and friction pad mounting means. 3,800,923, Cl. 188-73.600.

Rion Kabushiki Kaisha: *See—*
Yo, Kiyotoshi, 3,801,839.

Rist, George A., to Du Pont de Nemours, E. I., and Company. Process for adhering acrylics to chrome. 3,801,354, Cl. 117-75.000.

Ritter Engineering Company: *See—*
Ponter, Robert J., 3,800,667.

Riv-Skf Officine De Villar Perosa S.p.A.: *See—*
Veglia, Bartolo, 3,801,172.

Rivers, Russell C.: *See—*
Palumbo, Vincent F.; Rivers, Russell C.; and Horner, Jack G., 3,801,812.

Robbins Company, The: *See—*
West, Harold H., 3,800,887.

Robbins, Edward S., Jr. Tackless stair carpet protector. 3,801,424, Cl. 161-123.000.

Roberts, Frank B., to Victor Products (Wallsend) Limited. System for supplying electric power to loads in hazardous atmospheres. 3,801,865, Cl. 315-187.000.

Roberts, Lawrence, to S & S Corrugated Paper Machinery Co., Inc. Inking apparatus having automatic wash-up means. 3,800,702, Cl. 101-425.000.

Robertshaw Controls Company: *See—*
Branson, Charles D.; and Genbauffe, Francis S., 3,801,007.
Hardin, George T., 3,800,862.
Hendrick, Fred W., 3,801,259.
Katchka, Jay R., 3,800,393.
Kreuter, Kenneth G.; and Mueller, Klaus P., 3,801,006.
Marquis, Edgar E., 3,801,754.
Zajac, Chester; and Baltrush, John, 3,801,795.

Robertson, Jerry E.: *See—*
Harrington, Joseph Kenneth; Kvam, Donald C.; Mendel, Arthur; and Robertson, Jerry E., 3,801,588.

Robin, Marcel: *See—*
Brandstetter, Robert; and Robin, Marcel, 3,801,448.

Robins, Robert George; and Edenborough, Barry William, to Unisearch Limited. Process for the reduction of uranyl salts. 3,801,701, Cl. 423-261.000.

Robinson, Ronald Dale, to International Nickel Company, Inc., The. Apparatus for decomposition of metal carbonyls. 3,800,740, Cl. 118-48.000.

Rockerath, John L., to Jet Sew, Inc. Sewing machine material feed mechanism. 3,800,719, Cl. 112-203.000.

Rocket Research Corporation: *See—*
Katter, Lincoln E.; and Galbraith, Lyle D., 3,801,127.

Rockwell International Corporation: *See—*
Herd, David P.; Fowler, John H.; Drouin, Andre H.; and Bush, Robert E., 3,800,869.

Roeder, Alfred: *See—*
Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, 3,801,695.

Roever, Wilhelm; Junghanb, Helmut; Roeder, Alfred; Kauczor, Hans-Werner; and Kuhne, Gunter, to Bayer Aktiengesellschaft and Duisburger Kupferhutte. Process for the separation of nickel and/or cobalt from manganese. 3,801,695, Cl. 423-49.000.

Rogers, Howard G.: *See—*
Land, Edwin H.; Bloom, Stanley M.; and Rogers, Howard G., 3,801,318.

Rogers, Jerry W., to Dayco Corporation. Endless power transmission belt. 3,800,611, Cl. 74-234.000.

Rohe Scientific Corporation: *See—*
Phelan, Charles Stephens, 3,800,984.

Rohm & Haas Company: *See—*
De Benneville, Peter L., 3,801,562.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 3,801,575.

Rohra, Alois: *See—*
Holzhauer, Hilbert; and Rohra, Alois, 3,801,216.

Rohrer, Wesley M., Jr.: *See—*
Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,801,440.

Roland, David H.: *See—*
Haynie, Jack J.; Roland, David H.; and Simpson, Torrence, Jr., 3,801,132.

Rolf, Walter Kaiser, to Berstorff, Hermann, Maschinenbau GmbH. Apparatus for exerting continuous pressure. 3,801,250, Cl. 425-224.000.

Rolff, Klaus-Peter; and Huhse, Peter, to Siemens Aktiengesellschaft. Electrical contact for high voltage power circuit current. 3,801,764, Cl. 200-148.00r.

Roll, Harry; Wergau, Jorg; and Dockhorn, Walter, to Chemische Werke Huls Aktiengesellschaft. Continuous emulsion polymerization or copolymerization of vinyl chloride without heavy metal salts. 3,801,560, Cl. 260-92.80w.

Rolls-Royce (1971) Limited: *See—*
Moore, Alan; and Rolls-Royce (1971) Limited, 3,801,218.

Ronellenfitch, Bernard M.: *See—*
Reid, Charles M.; and Ronellenfitch, Bernard M., 3,800,946.

Ronen, Ram Shaul; and James, Edward Anthony, to RCA Corporation. Method of depositing electrode leads. 3,801,477, Cl. 204-15.000.

Ronning, Jacob A. Manual material spreader and leveler. 3,800,883, Cl. 172-371.000.

Roos, Ernst: *See—*
Hartmann, Peter; and Roos, Ernst, 3,801,603.

Roschmann, Klaus; and Wuhle, Alwin, to Teldec Telefunken-Decca Schallplatten GmbH. Method for improving the centering of stamping matrices. 3,801,476, Cl. 204-5.000.

Roschmann, Peter, to U.S. Philips Corporation. Miniaturized YIG band-pass filter having defined damping poles. 3,801,936, Cl. 333-73.00c.

Rose, Elva Lincoln, to Du Pont de Nemours, E. I., and Company. Fluid jet apparatus for processing yarn. 3,800,371, Cl. 28-1.400.

Rose, Jack H., to Massey-Ferguson Inc. Apparatus for directing air flow and sound waves. 3,800,910, Cl. 181-35.00a.
Rosemount Inc.: *See—*
Frick, Roger L., 3,800,413.
Rosgen, Friedhelm; and Schwarz, Hans, to Aktiengesellschaft Brown, Boveri & Cie. Grabbing device for a nuclear charging machine. 3,801,148, Cl. 294-86.00a.
Ross, Donald R., Jr., to U-S Safety Trolly Corporation. Trolley rails with expansion joints between them. 3,801,751, Cl. 191-44.100.
Ross, Gerald F.; Delorenzo, Joseph D.; and Lamensdorf, David, to Sperry Rand Corporation. Transmission line presence sensor. 3,801,976, Cl. 340-258.00r.
Rossi, Alberto, to Ciba-Geigy Corporation. α-Phenyl-fatty acids substituted by azacycloalkyl residues and their derivatives. 3,801,581, Cl. 260-293.720.
Rostone Corporation: *See—*
Wilkinson, Robert E.; Truitt, Robert B.; Hunter, Richard P.; and Bennett, Ronald E. (said Wilkinson and truitt assors. to), 3,801,727.
Roth, Eric Michael. Directional brush. 3,800,353, Cl. 15-184.000.
Roth, Herbert R.: *See—*
Comer, William T.; and Roth, Herbert R., 3,801,631.
Roth, Johann. Method and apparatus for synchronous recording of sounds on a film. 3,801,190, Cl. 352-5.000.
Rouse, Paul L., to International Harvester Company. Combine sieve support. 3,800,803, Cl. 130-24.000.
Roussel-UCLAF: *See—*
Goffinet, Bernard, 3,801,607.
Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,801,623.
Perronnet, Jacques; and Girault, Pierre, 3,801,302.
Rowe, Joseph L. Fish hook case construction. 3,800,456, Cl. 43-25.200.
Royalty Designs Corporation: *See—*
Birk, Donald G., 3,800,815.
Rozentals, Alfreds, to Heim Universal Corporation. Preloading anti-friction bearing assembly. 3,801,171, Cl. 308-184.000.
Ruegg, Rudolf; and Schmialek, Peter, to Hoffmann-La Roche Inc. Pesticides. 3,801,652, Cl. 260-614.00r.
Ruemens, Wilhelm: *See—*
Petersen, Harro; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenter, 3,801,546.
Ruf, Max, to Audi NSU Auto Union Aktiengesellschaft and Wankel G.m.b.H. Rotary engine of trochoidal design. 3,801,240, Cl. 418-61.00a.
Ruhle, Walter: *See—*
Luders, Rudeger; Negele, Richard; and Ruhle, Walter, 3,800,925.
Ruhrmann, Josef, Dr.-Ing.: *See—*
Ruhrmann, Wolfgang, 3,800,394.
Ruhrmann, Wolfgang, to Ruhrmann, Josef, Dr.-Ing. Method of making slide fastener from continuous chain. 3,800,394, Cl. 29-408.000.
Rush, Charles D. 90/90 traction board. 3,800,787, Cl. 128-75.000.
Russell, Gordon D., to Johnson & Johnson. Polymer blend containing polyacrylic acid, polyvinyl alcohol, and a polyacrylate. 3,801,675, Cl. 260-901.000.
Russell, Ronald W.; and Solomon, James E., to Motorola, Inc. Transconductance reduction using multiple collector PNP transistors in an operational amplifier. 3,801,923, Cl. 330-32.00d.
Ryall, Michael Leslie; Anderson, Harold Henry; and Pezzani, Guido, to Weir Pumps Limited. Fluid machines. 3,801,217, Cl. 415-199.00a.
Ryan, John W. Duct cleaning apparatus. 3,800,358, Cl. 15-312.00r.
Rymer, Harold Frank, to Ferranti Limited. Digital display generators. 3,801,720, Cl. 35-10.400.
Ryowa Choon Kogyo Kabushiki Kaisha: *See—*
Nozawa, Kenji, 3,800,687.
S & S Corrugated Paper Machinery Co., Inc.: *See—*
Roberts, Lawrence, 3,800,702.
S.A. Texaco Belgium N.V.: *See—*
Reynolds, Stuart Arthur; and Story, Hugh Goodman, 3,800,911.
Saas, Hosny Y.; Tuffile, Fred M.; Cunningham, Andrew J.; and Franco, Philip, to Avon Products, Inc. Bleaching composition for permanently dyed hair and method of use. 3,800,809, Cl. 132-7.000.
Sack, Joseph R.; and Fuerst, Bernard. Liner plate junction seal. 3,800,474, Cl. 51-9.000.
Sack, Milton, to Allied Chemical Corporation. Preparation of sodium percarbonate. 3,801,706, Cl. 423-421.000.
Saeva, Franklin D.; and Sargent, Donald E., to Xerox Corporation. Imaging method utilizing chemical reactivities of photoexcited states of aromatic hydroxy compounds. 3,801,319, Cl. 96-27.00r.
Sage, Ira H.: *See—*
Franks, Douglas G. K.; and Sage, Ira H., 3,800,995.
Saiki, Atsushi: *See—*
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.
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Saito, Nobuo: *See—*
Okuhara, Akira; Nakajima, Takashi; and Saito, Nobuo, 3,801,488.
Sakai, Kazuo: *See—*
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Sakashita, Kiyoshi: *See—*
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Sakurai, Kiyohi: *See—*
Takimoto, Yasuyuki; Yoshikawa, Toshikazu; Sakurai, Kiyohi; Umeda, Yasusi; and Hirayama, Takeshi, 3,801,328.
Salmond, Kent A.: *See—*
Sordello, Frank J.; and Salmond, Kent A., 3,801,969.
Samra, Herb G. Multiple purpose vehicle signal device. 3,800,430, Cl. 340-95.00r.
Samson, David, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Tool for electrolytic drilling of holes. 3,801,489, Cl. 204-284.000.
Sanders Associates, Inc.: *See—*
Richmond, Martin R., 3,801,982.
Schwartz, Jacob; and Naiman, Charles S., 3,801,825.
Sanderson, Robert Arthur, to RCA Corporation. Apparatus for easily engaging, disengaging and locking load to rotatable driving element. 3,801,033, Cl. 242-68.300.
Sandner, Michael Ray; and Osborn, Claiborn Lee, to Union Carbide Corporation. Radiation curable coating compositions. 3,801,329, Cl. 96-115.00p.
Sandor, Bela, to General Motors Corporation. Gas spring booster arrangement. 3,801,085, Cl. 267-8.00r.
Sandoz Ltd.: *See—*
Guttmann, Stephan; Pless, Janos; and Bossert, Heinz, 3,801,561.
Helfenberger, Hans; and Lutz, Karl, 3,801,577.
Sano, Yoshiaki; Ishikawa, Tomio; Hirose, Yoshitaka; and Miki, Yasumasa, to Matsushita Electric Industrial Company, Limited. Frying appliance. 3,801,331, Cl. 99-403.000.
Santilli, James N.: *See—*
Grove, Louis C., Jr.; Harder, John E.; Kennon, Richard D.; and Santilli, James N., 3,801,870.
Sarbacher, Robert I.: *See—*
Mauch, Robert E.; and Sarbacher, Robert I., 3,801,794.
Sargent, Donald E.: *See—*
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Sartori, Raymond Gerald, to Liskey Aluminum, Inc. Deforming a slotted tube. 3,800,582, Cl. 72-78.000.
Sasaki, Ryusei: *See—*
Morishita, Hirosada; Sasaki, Ryusei; Sakashita, Kiyoshi; and Yasui, Eiji, 3,801,427.
Sascha Brastoff Metal Arts Company: *See—*
Block, Ramon M.; and Fencl, George J., 3,801,413.
Sasse, Klaus; Eue, Ludwig; and Hack, Helmuth, to Bayer Aktiengesellschaft. 1,3,4-Thiadiazol-5-one-2-YL-ureas. 3,801,589, Cl. 260-306.80d.
Sasson, Shemtov. Projector and film cartridge therefor. 3,801,193, Cl. 352-72.000.
Sata, Naoyasu. Internal combustion engine actuator fluid producing no nitrogen oxide in exhaust gases, its manufacturing method and an apparatus therefor. 3,800,761, Cl. 123-119.00e.
Sato, Eiichiro: *See—*
Yamada, Eiichi; Kosa, Yasunobu; and Sato, Eiichiro, 3,801,383.
Sato, Kazuo; Kamiyama, Kenji; and Tahara, Koichi, to Agency of Industrial Science & Technology. Multi-stage flash distillation plant. 3,801,471, Cl. 202-173.000.
Sato, Kikuji: *See—*
Harada, Seiki; Nonogaki, Saburo; Oba, Yoichi; Saiki, Atsushi; Okabe, Takahiro; Kohashi, Takahiro; and Sato, Kikuji, 3,801,880.
Sato, Sadao: *See—*
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.
Satre, Cliff Wayne: *See—*
Groat, Roy Francis; and Satre, Cliff Wayne, 3,800,818.
Sauer, Louis E.; and Miller, Orville C., to Centenary Central, Inc. Die layout apparatus. 3,800,421, Cl. 33-22.000.
Saunders Archery Co.: *See—*
Saunders, Charles A.; Saunders, Thomas Allen; and Saunders, Eugene F., 3,800,424.
Saunders, Charles A.; Saunders, Thomas Allen; and Saunders, Eugene F., to Saunders Archery Co. Bow sight. 3,800,424, Cl. 33-265.000.
Saunders, Eugene F.: *See—*
Saunders, Charles A.; Saunders, Thomas Allen; and Saunders, Eugene F., 3,800,424.
Saunders, Thomas Allen: *See—*
Saunders, Charles A.; Saunders, Thomas Allen; and Saunders, Eugene F., 3,800,424.
Savage, Carl M., Jr.: *See—*
Knight, John W., IV; and Savage, Carl M., Jr., 3,801,126.
Savage, Donald V.: *See—*
Gale, Lee G.; and Savage, Donald V., 3,800,895.
Sawai, Sadamu: *See—*
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.
Sawvell, Roger V.: *See—*
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Scan-Tron Corporation, mesne: *See—*
Sokolski, Michael; and Poole, Thomas J., 3,800,439.

Scanner, Inc.: *See*—
Acker, Norbert Karl, 3,801,775.

Scarrott, Gordon George: *See*—
Maguire, Gerald John; and Scarrott, Gordon George, 3,801,180.

Scarsella, Edward L.: *See*—
Mahlmann, James P.; and Scarsella, Edward L., 3,801,716.

Schaaf, Robert: *See*—
Howard, Sol; and Schaaf, Robert, 3,800,359.

Schaefer, Richard J. Ozone generator. 3,801,791, Cl. 250-532.000.

Schafbuch, Larry N. Cleaning attachment for rotary tiller. 3,800,880, Cl. 172-39.000.

Schafer, Thomas C.; and Shields, Martin A., to Bendix Corporation, The. Hydraulic pressure modulator. 3,801,160, Cl. 303-21.00f.

Schaller, Robert L., to Sundstrand Syracuse, Inc. Contour grinder. 3,800,609, Cl. 74-230.210.

Scharf, Hans, to Siemens Aktiengesellschaft. Ceramic nuclear fuel or breeder material tablets and method of producing the same. 3,801,451, Cl. 176-73.000.

Scharfe, Gerhard: *See*—
Grolig, Johann; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,801,626.
Wolz, Hermann; Wenzel, Rupert; Martin, Manfred; and Scharfe, Gerhard, 3,801,662.

Schatz, Arthur: *See*—
Gawlick, Heinz; Schatz, Arthur; and Mothes, Heinz, 3,800,706.

Scheel, Joachim; and Pauler, Horst, to Aktiengesellschaft, Brown, Boveri & Cie. Method for insulating electrical conductor components of an electrical apparatus utilizing mica tape impregnated with a hardenable synthetic resin. 3,801,392, Cl. 156-51.000.

Scheeweiss, Manfred: *See*—
Gotzenberger, Adolf; and Scheeweiss, Manfred, 3,801,125.

Scheitlin, George E.; and Little, Richard F., to Arvin Industries, Inc. Catalytic converter. 3,801,287, Cl. 23-288.00f.

Schell, Friedrich Peter. Material feeding platform. 3,800,842, Cl. 144-323.000.

Schelleng, Robert Douglas: *See*—
Church, Nathan Lewis; and Schelleng, Robert Douglas, 3,801,311.

Schenck, Carl, Maschinenfabrik GmbH, Firma: *See*—
Wawra, Carl Martin; and Chudey, Ivan, 3,800,589.

Schering AG: *See*—
Helm, Dietrich, 3,801,348.

Scheurermann, Horst; Mach, Wolfgang; and Radiki, Volker, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. O-imino-6-amino-substituted coumarins. 3,801,602, Cl. 260-345.200.

Schiler, Frederick S., to Bendix Corporation, The, mesne. Layout apparatus having improved angular adjustment means. 3,800,422, Cl. 33-169.00r.

Schiltknecht, Adolf, to Rieter Machine Works, Ltd. Fiber opening roll of an open end spinning device. 3,800,520, Cl. 57-58.910.

Schimmer, Rigobert; Gesing, Horst; Beerwerth, Wolfgang; and Messerschmidt, Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Method of forming a soldering jig from polyimide plastic. 3,800,408, Cl. 29-193.000.

Schindler, Herbert; and Ware, Willard O., to M.M.S. Limited, mesne. Fluid heater appliance. 3,800,748, Cl. 122-367.00c.

Schink, Norbert: *See*—
Baumgartner, Werner; Schink, Norbert; Schnoeller, Manfred; and Sporrer, Ludwig, 3,801,769.

Schischkow, Konstantin F. Exhaust purifier and method. 3,800,532, Cl. 60-274.000.

Schlage, Ernest L., to Schlage Lock Company. Key cylinder and electrical switch. 3,801,755, Cl. 200-44.000.

Schlage Lock Company: *See*—
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Schlichting, Hans L.: *See*—
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Schloemann Aktiengesellschaft: *See*—
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Schloss, Robert P. Joint-immoblizing temporary splint. 3,800,789, Cl. 128-90.000.

Schlueter, Donald K. Wire stripper. 3,800,418, Cl. 30-91.200.

Schmialek, Peter: *See*—
Ruegg, Rudolf; and Schmialek, Peter, 3,801,652.

Schmidgall, Phillip L. Flashing novelty device. 3,801,866, Cl. 315-200.00a.

Schmidt, John G., to Monsanto Company. Fabrication of semiconductor devices. 3,801,384, Cl. 148-188.000.

Schmidt, Robert R.: *See*—
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; Eue, Ludwig; and Schmidt, Robert R., 3,801,590.

Schmidt, Walter-Ernest; and Vilceanu, Radu, to Centrul de Chimie Timisoara. Acridine and triarymethane dyestuffs from diarylamines. 3,801,579, Cl. 260-279.000.

Schmieder, Fritz: *See*—
Michaelis, Heinz; Rethmeier, Gerhard; and Schmieder, Fritz, 3,801,774.

Schmitt, James L., to Caterpillar Tractor Company. Recirculating oil system. 3,800,913, Cl. 184-6.130.

Schnabele, Werner, to Messerschmitt-Bolkow-Blohm GmbH. Launching device for projectiles. 3,800,656, Cl. 89-1.701.

Schneider, Abraham, to Sun Research and Development Company. Cyclic isoprene process. 3,801,667, Cl. 260-680.00c.

Schnoeller, Manfred: *See*—
Baumgartner, Werner; Schink, Norbert; Schnoeller, Manfred; and Sporrer, Ludwig, 3,801,769.

Schoen, Erich; Drebes, Friedrich; and Birresborn, Gunter, to Otto, C., Dr., & Comp., G.m.b.H. Exhaust hood for coke oven quenching car. 3,801,473, Cl. 202-263.000.

Scholl, Jule A. Boring and facing apparatus. 3,800,637, Cl. 82-34.00d.

Schorr, Anthony Joseph: *See*—
Gallo, Paul Joseph, Jr.; and Schorr, Anthony Joseph, 3,801,728.

Schott, Lawrence A. Infinitely variable transmission with lubricating wick means. 3,800,606, Cl. 74-198.000.

Schrag, Gerald S.: *See*—
Stallings, John P.; Schrag, Gerald S.; and Semancik, John R., 3,801,693.

Schramm, Paul H.: *See*—
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Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Turner, Alfrey, Jr., to Dow Chemical Company, The. Multilayer plastic articles. 3,801,429, Cl. 161-181.000.

Schrewe, Klaus; Knipp, Ullrich; and Ravasz, Akos, to Imperial Chemical Industries Limited. Injection moulding. 3,801,684, Cl. 264-40.000.

Schrider, Michael Stanley: *See*—
Diehl, Robert Eugene; Schrider, Michael Stanley; and Kantor, Sidney, 3,801,630.

Schroder, Josef, to Fecken-Kirfel KG Maschinenfabrik. Apparatus for the template cutting of workpieces. 3,800,650, Cl. 83-789.000.

Schubeck, Phillip A., to Ford Motor Company. EGR enrichment valve. 3,800,766, Cl. 123-119.00a.

Schuch, Werner: *See*—
Knappstein, Johannes; Thiersch, Friedrich; and Schuch, Werner, 3,801,470.

Schultz, Peter C.; and Voorhees, Francis W., to Corning Glass Works. Method of producing glass. 3,801,294, Cl. 65-78.000.

Schultze, Edward F.: *See*—
Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,800,875.

Schwan, Wolfgang: *See*—
Lohr, Alfred; Schwan, Wolfgang; and Tscheck, Wolfgang, 3,800,778.

Schwartz, Bertram: *See*—
Dyment, John Cameron; Logan, Ralph Andre; and Schwartz, Bertram, 3,801,391.

Schwartz, Jacob; and Naiman, Charles S., to Sanders Associates, Inc. Apparatus for detecting coherent radiant energy. 3,801,825, Cl. 250-216.000.

Schwartz, Robert E.: *See*—
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Schwartz, Walter M., Jr.: *See*—
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Schwarze, Werner: *See*—
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Scientific Research Instruments, Corporation: *See*—
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Scoggin, Jack S., to Phillips Petroleum Company. Solvent removal from poly(arylene sulfide) reaction slurry. 3,800,845, Cl. 159-47.000.

Scorpion, Inc.: *See*—
Irvine, Gerald D., 3,800,897.

Scott Land Levelers, Inc.: *See*—
Estes, David A., 3,800,884.

Scott, William B.; and Sawvell, Roger V., to Whitney, W. A., Corporation. Punch press with improved slug handling system. 3,800,643, Cl. 83-100.000.

Scragg, Ernest, & Sons Limited: *See*—
Waterhouse, George, 3,801,252.

Scruggs, James A., to United States of America, Army, mesne. Direct crystallization of aluminum hydride from toluene-ether. 3,801,657, Cl. 423-645.000.

Scudder, Philmore M.: *See*—
Butte, Walter A., Jr.; and Scudder, Philmore M., 3,801,619.

Sea-Link Incorporated: *See*—
West, Harold H., 3,800,733.

Searle, G. D., & Co.: *See*—
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, 3,801,459.

Sears, James H.; and Jones, Bernard H., to Owens-Corning Fiberglas Corporation. Apparatus for packaging strand. 3,801,032, Cl. 242-43.000.

Seeber, Willi: *See*—
Zlotek, Rudolf, 3,801,221.

Seeger, Ernst; Kahling, Joachim; and Encel, Wolfhard, to Boehringer Ingelheim GmbH. 4-Hydroxy-1-phenyl-2-pyrrolidino-pentane and salts thereof. 3,801,592, Cl. 260-326.50r.

Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Engelhardt, Gunther, to Boehringer Ingelheim GmbH. 4-(4)-Biphenylyl)-1-butanol. 3,801,654, Cl. 260-618.000.

Seino, Tetsuya; Nagahama, Mitsuo; and Nishi, Kengo, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engines of reciprocating piston type. 3,800,625, Cl. 74-604.000.

Seko, Tsuyoshi: *See*—

Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.

Selenky, Alexandr Mikhailovich: *See*—
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850

Self, Kenneth R.: *See*—
Bourgraf, Elroy E.; and Self, Kenneth R., 3,801,208.

Selman, Charles M., to Phillips Petroleum Company. Lithium alkenoxides as modifiers in organolithium initiated polymerization. 3,801,554, Cl. 260-83.700.

Semancik, John R.: *See*—
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Sember, Joseph Alexander; and Porter, Clyde Robert, to Porter, P. L., Co. Hydraulic coupling. 3,800,674, Cl. 92-48.000.

Semeia, Roberto, to AMF Mares Sub S.p.A. Diver's mask. 3,800,329, Cl. 2-14.00w.

Sendoykas, Jack J.: *See*—
McPherson, Alexander W.; and Sendoykas, Jack J., 3,801,091.

Seng Company, The: *See*—
Mizelle, Ned W., 3,800,337.

Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Pharmaceutical compositions of quinoxaline-di-N-oxides. 3,801,711, Cl. 424-248.000.

Sequin, Carlo Heinrich, to Bell Telephone Laboratories, Incorporated. Multiple-phase control signal generator. 3,801,827, Cl. 307-223.000.

Sequin, Carlo Heinrich, to Bell Telephone Laboratories, Incorporated. Charge transfer imaging devices. 3,801,884, Cl. 317-235.00r.

Serritella, James J. Non-spillable cup lid. 3,800,999, Cl. 229-7.00r.

Service d'Exploitation Industrielle des Tabacs: *See*—
Anfossi, Henri, 3,800,936.

Sevelin, Charles V.; and Palmquist, Philip V., to Minnesota Mining and Manufacturing Company. Retro-reflective film. 3,801,183, Cl. 350-105.000.

Seya, Toko: *See*—
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.

Shah, Ashok C.; and Peot, Craig B., to Upjohn Company, The. Solubility-dissolution test apparatus and method. 3,801,280, Cl. 23-230.00r.

Shakley, Conrad Dale, to Chemcut Corporation. Etchant remover apparatus and method. 3,801,387, Cl. 156-2.000.

Shand, J. Richard; and Merriken, Lyal N., to Airpax Electronics, Incorporated. Multiple switch assembly with external slide member allowing actuation of only one switch at a time. 3,801,758, Cl. 200-50.00c.

Shank, Gerald G.: *See*—
Carlson, Lowell D.; Reese, Gerald D.; and Shank, Gerald G., 3,800,754.

Shanok, Jesse P.: *See*—
Shanok, Victor; and Shanok, Jesse P., 3,801,417.

Shanok, Victor; and Shanok, Jesse P., to Glass Laboratories Company. Decorative molding and method of forming same. 3,801,417, Cl. 161-43.000.

Shapiro, Stephen I., to Union Carbide Corporation. Automatic pipettor. 3,801,283, Cl. 23-253.00r.

Sharp, Denis, to U.S. Philips Corporation. Anti-lock vehicle brake system. 3,801,161, Cl. 303-21.00f.

Sharpe, Louis F.; and Preuss, Ernest A., to Sun Chemical Corporation. Large field flash sensor. 3,801,821, Cl. 250-209.000.

Sharpe, Thomas H. Self-starting series jet engine with throttling assemblies. 3,800,529, Cl. 60-241.000.

Sharpe, Thomas H. Self-starting annular jet engine with plural burner and bypass duet. 3,800,531, Cl. 60-263.000.

Shattes, Walter J.; Marancik, William G.; and Kirk, Bradley S., to Air Reduction Company, Incorporated. Method of fabricating a hollow composite superconducting structure. 3,800,414, Cl. 29-599.000.

Shavel, John, Jr.: *See*—
Von Strandtmann, Maxmilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,801,644.

Shaw, Robert H., to United Aircraft Corporation. Fuel cell system comprising separate coolant loop and sensing means. 3,801,372, Cl. 136-86.00b.

Sheldon, Dunstan P.: *See*—
McInnis, Andrew M.; and Sheldon, Dunstan P., 3,800,700.

Sheldon Industries Inc.: *See*—
McInnis, Andrew M.; and Sheldon, Dunstan P., 3,800,700.

Shell Oil Company: *See*—
Barker, Michael D.; Wood, Jack; and Binnie, Edward N., 3,801,586.
Blytas, George C., 3,801,664.
Blytas, George C., 3,801,666.
Fletcher, Kenneth L.; and Haward, Robert N., 3,801,558.
Meier, Dale J.; and Kruka, Vitold R., 3,801,508.
Potter, Richard C., 3,801,529.

Shell, Ronald G.: *See*—
Von Glahn, William F.; and Shell, Ronald G., 3,801,804.

Shellenbaum, Dale L.: *See*—
Glassey, Stephen F.; Hahn, Allan C.; and Shellenbaum, Dale L., 3,800,751.

Shepard, John C.: *See*—
Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,800,875.

Sherman, William F. Method of making grinding wheel mounts. 3,800,483, Cl. 51-376.000.

Sherwood Medical Industries Inc.: *See*—
Walker, Clarence L., 3,800,795.

Shields, Martin A.: *See*—
Schafer, Thomas C.; and Shields, Martin A., 3,801,160.

Shields, Walter A. Apparatus for sealing hypodermic needles on syringe barrels. 3,801,291, Cl. 29-208.00b.

Shigemori, Hideto: *See*—
Hatanaka, Yoshihiro; and Shigemori, Hideto, 3,801,805.

Shigeta, Yoshihiro: *See*—
Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzaki, Kuniyoshi, 3,801,040.

Shimada, Kazuyuki: *See*—
Kojima, Kunio; Shimada, Kazuyuki; and Wada, Mitsuo, 3,801,364.

Shimizu, Shinkichi: *See*—
Shiraishi, Tatsuo; Shimizu, Shinkichi; Atsumi, Akihiko; and Ichihashi, Hiroshi, 3,801,670.

Shinada, Shinichi: *See*—
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,801,864.

Shindo, Ryuichi: *See*—
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.

Shine, William P.: *See*—
Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., 3,801,408.

Shinoda, Toshimitu: *See*—
Kurata, Kazuhiro; Kasano, Hiroyuki; Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, 3,801,509.

Shinoda, Wataru: *See*—
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.

Shinohara, Yasuo: *See*—
Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, 3,801,368.

Shiosaka, Makuto: *See*—
Miyake, Toshio; and Shiosaka, Makuto, 3,801,461.

Shipman, John W.; and Rahman, Abdul R., to United States of America, Army. Method of dehydrating naturally crisp vegetables and dehydrated vegetable products. 3,801,714, Cl. 426-310.000.

Shiraishi, Tatsuo; Shimizu, Shinkichi; Atsumi, Akihiko; and Ichihashi, Hiroshi, to Sumitomo Chemical Company Limited. Catalytic process for the production of diolefins. 3,801,670, Cl. 260-680.00e.

Shirasu, Kazuo; Amano, Hiroyuki; and Ohi, Reiichi, to Fuji Photo Film Co., Ltd. Process for preventing the discoloration of a color image and improving image stability. 3,801,322, Cl. 96-56.000.

Shiratsuchi, Eiichiro; and Tagami, Eijiro, to Japan Synthetic Rubber Co., Ltd. Process for preparing synthetic latex. 3,801,523, Cl. 260-29.6rw.

Shirley, James N.: *See*—
Berry, Fred M.; Shirley, James N.; and Bipsky, Eugene C., 3,800,802.

Shiseki, Nobuo: *See*—
Kubo, Isao; and Shiseki, Nobuo, 3,801,723.

Shizuoka-Kogyo Co., Ltd.: *See*—
Tokuno, Masateru, 3,801,437.

Shoemaker, Edwin J.; Gensler, Edwin G.; and White, David B., to La-Z-Boy Chair Company. Lounge chair having mobile base. 3,801,122, Cl. 280-43.240.

Shorter, Robin Ashley Clovis. Anchor head for post-stressed reinforced concrete structures. 3,801,067, Cl. 254-29.00a.

Shortridge, Earl W.: *See*—
Pace, Gerald F.; and Shortridge, Earl W., 3,801,694.

Shosie, Wayne A.: *See*—
Alcock, Richard A.; and Shosie, Wayne A., 3,800,645.

Shubeck, John V. Musical tone generating apparatus. 3,800,652, Cl. 84-404.000.

Shuhan, George N.: *See*—
Avondoglio, Leo; and Shuhan, George N., 3,800,514.

Shultz, Edmund Franklin, Jr.; and Katzaman, Ronald Eugene, to AMP Incorporated. Method and apparatus for assembly of contacts in a printed circuit board. 3,800,416, Cl. 29-625.000.

Shuruev, Lev Andreevich: *See*—
Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Medovar, Boris Izrailevich; Alferov, Yury Fedorovich; Pentegov, Igor Valerianovich; and Popov, Viktor Andreevich, 3,801,718.

Sidaplax N.V.: *See*—
Vermeulen, Emile Raymond, 3,800,502.

Siddall, John B.: *See*—
Henrick, Clive A.; and Siddall, John B., 3,801,611.

Siemens Aktiengesellschaft: *See*—
Barwig, Karlhorst; and Walker, Roland, 3,801,802.

Baumgartner, Werner; Schink, Norbert; Schnoeller, Manfred; and Sporrer, Ludwig, 3,801,769.
Dietz, Kurt, 3,801,847.
Elsel, Werner, 3,801,942.
Gotzl, Horst; and Rattner, Manfred, 3,801,790.
Haberrecker, Klaus, 3,801,846.
Leitgeb, Wilhelm, 3,801,833.
Malgdefessll, Heinz; and Verma, Hart Singh, 3,801,850.
Marin, Heiner, 3,801,763.
Michel, Eberhard, 3,800,598.
Noack, Dieter, 3,801,762.
Rolff, Klaus-Peter; and Huhse, Peter, 3,801,764.
Scharf, Hans, 3,801,451.

Siemes, Albertus Frederikus: *See—*
Piersma, Leonardus Jacovus; and Siemes, Albertus Frederikus, 3,801,398.

Signet Controls, Inc.: *See—*
Clinton, William D., 3,800,587.

Sigwald, Jacques, to Automobiles Peugot and Regie Nationale des Usines Renault. Liquid tank provided with de-gasing means. 3,800,978, Cl. 220-85.00r.

Siinov, Anatoly Georgievich: *See—*
Bashkov, Vladimir Alexeevich; Martynov, Oleg Viktorovich; Illkhonov, Sergie Sergeevich; Ordinartsev, Vladimir Nikolaevich; Ordinartsev, Jury Nikolaevich; Markarov, Mikhail Nikolaevich; Belousov, Vladimir Alexeevich; Siinov, Anatoly Georgievich; and Gorlov,Semen Maximovich, 3,800,855.

Simens, Robert R. Apparatus for frying chicken. 3,800,692, Cl. 99-332.000.

Simkus, Vyto: *See—*
Jesevich, John; and Simkus, Vyto, 3,800,401.

Simmonds, Robert C., Jr.: *See—*
Kyritsis, William T.; and Simmonds, Robert C., Jr., 3,801,686.

Simmons, Richard W.; and Berry, Stanley A., to Bendix Corporation, The. Data acquisition interface. 3,801,958, Cl. 340-147.00g.

Simon Engineering Dudley Limited: *See—*
Ashworth, Denis Henry, 3,800,912.

Simon, Jack, to Athlone Industries, Inc. Garment fastener assembly and method for making the same. 3,800,368, Cl. 24-216.000.

Simons, Leon; Lessig, Samuel H., Jr.; and Corrette, Richard H., to N L Industries, Inc. Die for forming lobed threads. 3,800,585, Cl. 72-469.000.

Simpson, Anthony Yelverton: *See—*
Wright, Raymond Grenville Whitehead; and Simpson, Anthony Yelverton, 3,800,905.

Simpson, Lee S. Traffic warning device. 3,800,735, Cl. 116-63.00p.

Simpson, Philip J., 50% to Boiteau, Maurice R. Valve assemblies. 3,801,233, Cl. 417-441.000.

Simpson, Robert D.; Boone, Jimmie H.; and Chenkovich, Gary A., to Boeing Company, The. Automatic approach landing and go-around pitch axis control system for aircraft. 3,801,049, Cl. 244-77.00a.

Simpson, Torrence, Jr.: *See—*
Haynie, Jack J.; Roland, David H.; and Simpson, Torrence, Jr., 3,801,132.

Sindelar, Ernest C.; and Smith, Duane R., to Caterpillar Tractor Company. Brake master cylinder cup seal with valve. 3,800,541, Cl. 60-588.000.

Singer Company, The: *See—*
Membrino, Robert J.; and Magee, Edward F., 3,800,440.
Worth, Daniel L.; and Eiland, Phillip F., 3,800,565.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. G.m.b.H. Supporting device of a ski safety binding. 3,801,120, Cl. 280-11.35t.

Skutt, Robert R., to National Cash Register Company, The. Plasma cell voltage control circuit. 3,801,862, Cl. 315-169.0tv.

Skytta, Osmo, to Valmet Oy. Doctor device for a paper making machine. 3,800,357, Cl. 15-256.510.

Slade, Doyle D. Motor driven patio cover. 3,801,809, Cl. 240-2.00r.

Slade, Owen George, to White, G. Samuel & Comapny Limited. Ship retarding system. 3,800,731, Cl. 114-145.00r.

Slavik, Vlastislav: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; and Slavik, Vlastislav, 3,800,521.

Slegten, Pierre Arsene. Method of controlling the amount of material in a grinding compartment of a tube mill. 3,801,025, Cl. 241-70.000.

Sletzinger, Meyer: *See—*
Reinhold, Donald F.; Sletzinger, Meyer; and Firestone, Raymond A., 3,801,601.

Sly-Mark Enterprises: *See—*
Jacobi, Jacob, 3,800,461.

Small, Terence S. Transposing device for musical instruments. 3,800,651, Cl. 84-386.000.

Smith, Calvin S.; and McLeod, William J., to Chevron Research Company. Hydrogen manufacture using centrifugal compressors. 3,801,708, Cl. 423-650.000.

Smith, Carl A.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,800,823.

Smith, David A.: *See—*
Gayner, Herbert; and Smith, David A., 3,800,395.

Smith, David J., to Bard, C. R., Inc. Release mechanism for back rest support. 3,800,338, Cl. 5-74.000.

Smith, David W.: *See—*
Trenary, John M.; and Smith, David W., 3,801,019.

Smith, Duane R.: *See—*
Sindelar, Ernest C.; and Smith, Duane R., 3,800,541.

Smith, Harvell Morton; and Hengstler, Robert Edward, to Johns-Manville Corporation. Apparatus for producing a mat. 3,801,243, Cl. 425-80.000.

Smith, John, to Dominion Auto Accessories Limited. Lamp construction. 3,801,810, Cl. 240-7.10r.

Smith, Linton E., III: *See—*
Moore, Eugene R.; Smith, Linton E., III; and Pickelman, Dale M., 3,801,549.

Smith, Myron R.: *See—*
Bewell, Robert G. S.; Austin, Carl C.; Halsey, Carl C.; and Smith, Myron R., 3,800,704.

Smith, Perry R. Reagent tube and centrifugally operated solid-liquid separation device. 3,800,947, Cl. 210-117.000.

Smith, Stanton M.: *See—*
Polizzano, Fred F.; Smith, Stanton M.; and Swiatovy, Edward S., 3,801,359.

Smith, Traver J., 1/2 to Hanscom, Genevieve I.; formerly Magnuson, Genevieve I. and 1/2 to Hansom, Genevieve I.; Magnuson, Robert; Thomson, Lois J.; formerly Duggan, Lois J., as trustees of the estate of Magnuson, Roy M. Dry blanching process. 3,801,715, C. 425-314.000.

Smith, Walter J.; and Bukey, John R., to Firestone Tire & Rubber Company, The. Spinnable compositions of nylon and a fatty diamide, and drawn articles spun therefrom. 3,801,521, Cl. 260-28.000.

Smith-Vaniz, William R.: *See—*
Kuring, Victor M.; Smith-Vaniz, William R.; Carley, Jay L.; Shine, William P.; and Darling, Richard H., 3,801,408.

Smithkline Corporation: *See—*
Parish, Roger C.; and Trei, John E., 3,801,710.

Societa Italiana Resine S.I.R., S.p.A.: *See—*
Bertoline, Natale; Calcagno, Benedetto; and Ghirga, Marcello, 3,801,665.

Societe Anonyme D.B.A.: *See—*
Le Marchand, Alain, 3,800,539.
Papiau, Guy, 3,800,540.

Societe Anonyme des Forges de Bologne: *See—*
Portal, Pierre, 3,800,475.

Societe Anonyme: Societe Industrielle de Combustible Nucleaire: *See-*
Chaulet, Roger Louis; Guichard, Claude Pierre Albert Louis; Menissier, Pierre Lucien; and Soret, Jean-Claude Georges, 3,800,848.

Societe Beaulieu S.A.: *See—*
Vaast, Charles, 3,801,192.

Societe Creusot-Loire: *See—*
Leroy, Pierre; and Sprunck, Emile, 3,801,084.

Societe en nom Collectif "Science Union et Cie": *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,801,628.

Societe Francaise de Recherche Medicale: *See—*
Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, 3,801,628.

Societe Genetale Conseil SO. GE. Co.: *See—*
Coscia, Giovanni A., 3,801,251.

Societe Miniere et Metallurgioue de Penarroya: *See—*
Rey, Maurice; and Formanek, Victor, 3,801,306.

Soehngen, John W.: *See—*
Vogt, Clifford M.; Soehngen, John W.; and Polise, Joseph C., 3,801,400.

Sofredi: *See—*
Advenier, Pierre M., 3,800,749.

Sokolski, Michael; and Poole, Thomas J., to Scan-Tron Corporation, mesne. Test scoring apparatus. 3,800,439, Cl. 35-48.00b.

Solberg, Per: *See—*
Onarheim, Thor; and Solberg, Per, 3,800,865.

Solenberger, John Carl, to Du Pont de Nemours, E. I., and Company. Stabilized acidic hydrogen peroxide solutions. 3,801,512, Cl. 252-186.000.

Sollami, Blase J.; Bulat, Thomas J.; and Dray, Walter L., to Bendix Corporation, The. Cryogenic surgical instrument. 3,800,552, Cl. 62-293.000.

Solomon, James E.: *See—*
Russell, Ronald W.; and Solomon, James E., 3,801,923.

Solomon, William H., to Oliver Machinery Company. Packaging apparatus. 3,800,500, Cl. 53-180.000.

Solvay & Cie: *See—*
Coppens, Guillaume, 3,801,660.
Duikers, Marcel; and Minsart, Maurice, 3,800,638.

Someya, Taichi: *See—*
Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, 3,801,668.

Sommer, G. M., Co., Inc.: *See—*
Sommer, Gordon M., 3,800,930.

Sommer, Gordon M., to Sommer, G. M., Co., Inc. Variable speed drive. 3,800,930, Cl. 192-104.00p.

Sony Corporation: *See—*
Akiyama, Katsuhiko; and Kajiyama, Yuji, 3,801,388.

Sordello, Frank J.; and Salmond, Kent A., to Itel Corporation, mesne. Erase feature for data recording device. 3,801,969, Cl. 360-39.000.

Soret, Jean-Claude Georges: *See—*
Chaulet, Roger Louis; Guichard, Claude Pierre Albert Louis; Menissier, Pierre Lucien; and Soret, Jean-Claude Georges, 3,800,848.

Soubrier, Juan Gomez, to Regalos, Promociones y Serviceos, S.A. Interlocking figures for a chess set. 3,801,105, Cl. 273-137.00r.

Soulant, Herman A., Jr., to United States of America, Navy. Sea sensor and descriptor system. 3,800,601, Cl. 73-170.00a.

Sparber, Frederick J.; and Whiting, Glen H., to United States of America, Atomic Energy Commission. Radioisotope fueled heat transfer system. 3,801,446, Cl. 176-39.000.

Spaun, Rodiger: *See—*
Harris, Roger Lawrence Newton; and Spaun, Rodiger, 3,801,583.

Spellman, Patrick J. Miniature dry cell battery. 3,801,373, Cl. 136-109.000.

Spengler, Ernst M. Blank punching method and apparatus. 3,800,641, Cl. 83-50.000.

Sperry Rand Corporation: *See—*
Ross, Gerald F.; Delorenzo, Joseph D.; and Lamensdorf, David, 3,801,976.

Spiegel, Robert M., to Trygon Electronics Inc. Power supply with non-linear foldback current limiter circuit. 3,801,894, Cl. 323-91.000.

Spivack, John D.: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,801,540.

Spoor, Daniel L.: *See—*
Barrett, Iral D.; and Spoor, Daniel L., 3,800,576.

Sporrer, Ludwig: *See—*
Baumgartner, Werner; Schink, Norbert; Schnoeller, Manfred; and Sporrer, Ludwig, 3,801,769.

Sprunck, Emile: *See—*
Leroy, Pierre; and Sprunck, Emile, 3,801,084.

Squibb, E. R., & Sons, Inc.: *See—*
Hulit, Harry J.; and Czaplinski, Thomas V., 3,801,818.

S.R.C. Laboratories, Inc.: *See—*
Mocaraski, Zenon R., 3,801,020.

St. Joe Minerals Corporation: *See—*
Bowman, Robert S., 3,801,316.

Stache, Ulrich; Fritsch, Werner; Faede, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-Amino-4,5-dehydro-cardenolides and process for their manufacture. 3,801,570, Cl. 260-239.570.

Stager, Francis W.; and Minor, Robert N., to Biocor Corporation. Biodegradable container. 3,800,977, Cl. 220-83.000.

Stallings, John P.; Schrag, Gerald S.; and Semancik, John R., to Diamond Shamrock Corporation. Method of coloring low profile reinforced unsaturated polyesters. 3,801,693, Cl. 264-246.000.

Stamicarbon N.V.: *See—*
Elmendorp, Jan; and de Rooij, Abraham H., 3,801,566.
Lemmens, Jan C., 3,801,343.

Stamp, Thomas Blackledge. Apparatus for discharging molten metals with pump emptying means. 3,800,986, Cl. 222-146.0he.

Standard Oil Company: *See—*
Hughes, Robert D.; and Steigelmann, Edward F., 3,800,506.
Moore, Thomas M.; and Boyden, Thomas F., 3,801,494.
Rhodes, Joseph C.; and Ginsburgh, Irwin, 3,800,768.

Standard Oil Company, The: *See—*
Bradley, M. P. Timothy, 3,800,593.
Standish, Norman W., 3,801,300.

Standish, Norman W., to Standard Oil Company, The. Process for fertilizing and treating oil containing nematocides and compositions therefor. 3,801,300, Cl. 71-3.000.

Standley, Robert Dean: *See—*
Hamaswamy, Vellayan; and Standley, Robert Dean, 3,801,185.

Staniforth, Thomas Raymond: *See—*
Hanney, Philip Michael; and Staniforth, Thomas Raymond, 3,800,560.

Stankard, Donald Rider; and Wilson, Thomas William, to English Calico Limited. Printing web materials. 3,801,275, Cl. 8-149.000.

Star Filter Company: *See—*
Lampcov, Harold, 3,800,954.

Stark, Donald R.; and Hirsch, Irving A., to Boeing Company, The. Automatic landing system for hydrofoil craft. 3,800,727, Cl. 114-66.50h.

Stark, Marvin; Jones Jerry L.; Tuck, Richard L., Sr.; and Aquino, Herman A., to Pullman Incorporated. Trough hatch locking device. 3,800,714, Cl. 105-377.000.

Starr, Wendell T.: *See—*
Nakata, Roy; Ouyang, Mid; and Starr, Wendell T., 3,801,730.

Stauffer Chemical Company: *See—*
Toy, Arthur D. F.; and Uhing, Eugene A., 3,801,542.

Stauffer, Rita A. Hand saver. 3,800,361, Cl. 16-116.000.

Steele, Gilbert V., to Bowmar Instrument Corporation. Rotor member for rotary magnetic position indicator. 3,801,844, Cl. 310-156.000.

Steenhoudt, Jan, to N. V. Bekaert, S.A. Method of making a composite panel. 3,801,396, Cl. 156-622.000.

Stefani, Joseph P., to General Electric Company. Isolation mounting for semiconductor device. 3,801,874, Cl. 317-100.000.

Steigelmann, Edward F.: *See—*
Hughes, Robert D.; and Steigelmann, Edward F., 3,800,506.

Steiger, Douglas W., to Hydra-Mac, Inc. Front end loader vehicle. 3,800,969, Cl. 214-778.000.

Steinberg, David H.: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,801,540.

Steinberg, Meyer; and Farber, Gerald, to United States of America, Atomic Energy Commission. Refuse and sewage polymer impregnated concrete. 3,801,358, Cl. 117-113.000.

Steinitz, Robert, to Driver, Wilbur B., Company. Permanent magnet alloy using molybdenum and titanium. 3,801,312, Cl. 75-170.000.

Stelwagen, Jan; and Van Loon, Huibert. Washing and spin-drying machine with auxiliary mass. 3,800,567, Cl. 68-232.000.

Stelwagen, Jan; and Van Loon, Huibert, to U.S. Philips Corporation. Balancing device. 3,800,622, Cl. 74-573.00f.

Stendig, Joseph L.; and Davis, Claude A. Telephone alarm system. 3,801,971, Cl. 340-220.000.

Stenger, Roy T. Lockable support for artistic renderings on display. 3,801,055, Cl. 248-176.000.

Stephans, John F. Capstan tensioner. 3,800,993, Cl. 226-187.000.

Stephens, Donald L. Universal grill cleaner. 3,800,354, Cl. 15-236.00r.

Sternbach, Henryk: *See—*
Ning, Robert Ye-Fong; and Sternbach, Henryk, 3,801,569.

Stetler, Dwight L.: *See—*
Jones, Charles Wright; and Stetler, Dwight L., 3,800,677.

Stevens, Richard C.: *See—*
Baker, Theodore H.; Chafghaichi, Majid; and Stevens, Richard C., 3,801,905.

Stewart-Warner Corporation: *See—*
Treland, Robert G.; and Tramontini, Vernon N., 3,800,866.

Stichling Revalidatie Research Schiedam: *See—*
Kroes, Willem Jacobus, 3,800,453.

Stidham, James F. Automatic feed dispensing apparatus. 3,800,746, Cl. 119-56.00r.

Still, Carl, Firma: *See—*
Knappstein, Johannes; Thiersch, Friedrich; and Schuch, Werner, 3,801,470.

Stockle, Hans: *See—*
Klaiber, Erich; Stockle, Hans; and Domann, Helmut, 3,800,755.

Stockmann, Helmut: *See—*
Decker, Hanns; Jakobs, Willy; and Stockmann, Helmut, 3,801,026.

Stoddard, William H., Jr.: *See—*
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,800,410.

Stokes, Richard William: *See—*
Denney, Ernest James; and Stokes, Richard William, 3,801,806.

Stoltz, James L.: *See—*
Hayes, Edward O., 3,801,015.

Stone & Webster Engineering Corporation: *See—*
Lowrance, Edgar G.; and Eames, John P., 3,801,698.

Stone, Aubrey L., to Texaco Inc. Non-flammable water based hot forging lubricating compositions. 3,801,504, Cl. 252-23.000.

Stone Conveyor, Inc.: *See—*
Stone, Guthrie B., 3,800,938.

Stone, Guthrie B., to Stone Conveyor, Inc. Conveyor assembly with extrusions having inclined corners. 3,800,938, Cl. 198-204.000.

Stone, Herman: *See—*
Tetenbaum, Marvin T.; and Stone, Herman, 3,801,533.

Stone, Walter N., to Kaman Aerospace Corporation. Helicopter hauldown and securing system. 3,801,050, Cl. 244-115.000.

Stord Bartz Industri A/S: *See—*
Onarheim, Thor; and Solberg, Per, 3,800,865.

Story, Hugh Goodman: *See—*
Reynolds, Stuart Arthur; and Story, Hugh Goodman, 3,800,911.

Stoudt, Thomas H.; and Long, Robert A., to Merck & Co., Inc. Simultaneous steroid oxygenation and 1-dehydrogenation with bacillus cereus. 3,801,460, Cl. 195-51.00a.

Strebel, Albert, to Maschinenfabrick Burckhardt AG. Device for centrally guiding the working piston in the working cylinders of high-pressure compressors or pumps. 3,801,167, Cl. 417-90.000.

Strickland, James C., to MCI, Inc. A.C. control circuit. 3,801,920, Cl. 330-10.000.

Striegler, Hellmut; Resz, Raoul; and Bartl, Herbert. Bonded non-woven fibre fleece. 3,801,428, Cl. 161-169.000.

Stroot, Walter: *See—*
Gorlach, Helmut; Stroot, Walter; and Kreckl, Alois, 3,801,422.

Structural Systems, Inc.: *See—*
Boice, G. Newton, 3,800,489.

Stuart, Alexander: *See—*
Wood, Hamish Christopher Swan; and Stuart, Alexander, 3,801,643.

Stuck, Klaus. Ball joint friction welding method. 3,801,395, Cl. 156-73.000.

Stumpf, Gene L.; and Tweed, Donald G., to GTE Lenkurt Incorporated, mesne. Main distribution frame-mounted central office subscriber carrier channel unit shelf. 3,801,873, Cl. 317-99.000.

Sulcek, Charles E.: *See—*
Miller, Frank E.; and Sulcek, Charles E., 3,800,694.

Sullivan, Carl. Electrically heated printing screen construction. 3,800,697, Cl. 101-128.100.

Sullivan, Dennis J.: *See—*
Marshall, Richard L.; and Sullivan, Dennis J., 3,800,527.

Sullivan, Patrick R.; Leidgen, George W.; and Hubbell, James C., to Brunswick Corporation. Drainage system for internal combustion engine having a horizontally disposed crankshaft. 3,800,753, Cl. 123-73.00a.

Sullivan, William T. O.: *See—*
Marrese, Rocco Anthony; and Sullivan, William T. O., 3,800,793.

Sumino, Yasuhiro: *See—*
Suzuki, Takashi; Sumino, Yasuhiro; Akiyama, Shunichi; and Fukuda, Hideo, 3,801,455.

Sumitomo Chemical Company Limited: *See—*
Shiraishi, Tatsuo; Shimizu, Shinkichi; Atsumi, Akihiko; and Ichihashi, Hiroshi, 3,801,670.

Summerlin, Frederick Arthur; and Jeal, Harvey Philip, to Aerpat A.G., mesne. Fastener. 3,800,581, Cl. 72-71.000.
Sumrell, Gene: *See—*
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,801,609.
Sumrill, Gene: *See—*
Magne, Frank C.; Mod, Robert R.; and Sumrill, Gene, 3,801,525.
Sun Chemical Corporation: *See—*
Sharpe, Louis F.; and Preuss, Ernest A., 3,801,821.
Sun Oil Company (Delaware): *See—*
Hardy, William C.; Schultze, Edward F.; and Shepard, John C., 3,800,875.
Sun Oil Company of Pennsylvania: *See—*
Benner, Robert I., 3,801,496.
Benner, Robert I., 3,801,497.
Young, Einar T., 3,800,833.
Sun Research and Development Company: *See—*
Butte, Walter A., Jr.; and Scudder, Philmore M., 3,801,619.
Hosler, Peter; and Baillie, Robert A., 3,801,620.
Schneider, Abraham, 3,801,667.
Sundberg, Erik Gustav, to Aktiebolaget Tudor. Method and sheath for lead-acid storage battery. 3,801,399, Cl. 156-148.000.
Sundstrand Corporation: *See—*
Kacek, Donald J., 3,800,534.
Kretssler, Ralph T., 3,800,922.
Sundstrand Data Control, Inc.: *See—*
Kistler, Walter P., 3,801,838.
Sundstrand Syracuse, Inc.: *See—*
Schaller, Robert L., 3,800,609.
Sunnen, Joseph. Honing mandrel with error compensation means. 3,800,482, Cl. 51-339.000.
Supra Products, Inc.: *See—*
Barrett, Iral D.; and Spoor, Daniel L., 3,800,576.
Surface Technology Corporation: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,801,381.
Suter, Charles A., to Goodyear Tire & Rubber Company, The. Method of preparing a composite structure. 3,801,402, Cl. 156-182.000.
Sutherland, Gilbert J., to Ford Motor Comapny. Temperature actuated engine spark vacuum control system. 3,800,758, Cl. 123-117.00a.
Sutter, Wilhelm: *See—*
Adolphen, Gerhard; Wedemeyer, Karlfried; and Sutter, Wilhelm, 3,801,651.
Sutton, Christopher John, to Girling Limited. Frequency detecting circuit with built-in testing arrangement. 3,801,829, Cl. 307-233.000.
Suyama, Tadashi: *See—*
Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,801,633.
Suzaki, Kuniyoshi: *See—*
Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzaki, Kuniyoshi, 3,801,040.
Suzuki, Mitsugu. Sleeve film cutting device. 3,800,498, Cl. 53-77.000.
Suzuki, Takashi; Sumino, Yasuhiro; Akiyama, Shunichi; and Fukuda, Hideo, to Takeda Chemical Industries, Ltd. Method for producing citric acid. 3,801,455, Cl. 195-28.00r.
Svenska Rotor Maskiner Aktiebolag: *See—*
Johnsson, Bo, 3,800,860.
Svenska Utvecklingsaktiebolaget: *See—*
Lindstrom, Olle B., 3,801,376.
Swanby, Melvin. Combination one way or two way fish line release device. 3,800,458, Cl. 43-43.120.
Swanson, Clifford D. Door jamb with mitered joints and L-shaped brackets. 3,800,488, Cl. 52-212.000.
Swanson, Robert G.: *See—*
Meyer, Robert W.; and Swanson, Robert G., 3,801,255.
Swanson, Una N.: *See—*
Anderson, Lawrence; Andres, William A.; Arimann, Edith R.; Child, Francis W.; and Swanson, Una N., 3,800,403.
Swedberg, Gordon E.: *See—*
Lau, John F., Jr.; and Swedberg, Gordon E., 3,800,469.
Swiatovy, Edward S.: *See—*
Polizzano, Fred F.; Smith, Stanton M.; and Swiatovy, Edward S., 3,801,359.
Swidler, Ronald: *See—*
Gamarra, Jose P.; and Swidler, Ronald, 3,801,277.
Swimm, Walter Thomas, to Purdue Frederich Company, The. Choline salicylate compositions. 3,801,613, Cl. 260-448.20n.
Switzer, Don R.: *See—*
Phillips, Clayton L.; and Switzer, Don R., 3,800,596.
Swodenk, Wolfgang: *See—*
Grolig, Johann; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,801,626.
Sybron Corporation: *See—*
Heit, Allyn H., 3,800,466.
Wagner, Hubert; and Moore, Darrlle D., 3,801,278.
Syntex Corporation: *See—*
Pfister, Jorg R.; Harrison, Ian T.; and Fried, John H., 3,801,598.
Szasz, Imre, to Paratronic AG. Measuring system for non-destructive thickness measurement of electrically non-conductive coatings on electrically conductive bodies. 3,801,900, Cl. 324-61.00r.
Szebeni, Rudolf: *See—*
Harsanyi, Kalman; Korbonits, Dezso; Szebeni, Rudolf; Gal, Gyula; and Keller, Laszio, 3,801,578.
Szromba, Roman: *See—*
Karkowski, Abdon; Nowak, Edmund; and Szromba, Roman, 3,801,262.
Szymber, Oleg, to GAF Corporation. Dial type Waban printed circuit switch. 3,801,753, Cl. 200-11.0da.
T. O. Plastics, Inc.: *See—*
Lau, John F., Jr.; and Swedberg, Gordon E., 3,800,469.
Taddeo, Lorraine. Self supporting elastic surgical stocking. 3,800,331, Cl. 2-240.000.
Tadokoro, Yoshihiro: *See—*
Yasukawa, Shigeru; Shinoda, Wataru; Shindo, Ryuichi; Tadokoro, Yoshihiro; Seya, Toko; Mitake, Susumu; Arai, Taketoshi; Hirano, Mitsumasa; Sato, Sadao; and Sawai, Sadamu, 3,801,443.
Tagami, Eijiro: *See—*
Shiratsuchi, Eiichiro; and Tagami, Eijiro, 3,801,523.
Tahara, Koichi: *See—*
Sato, Kazuo; Kamiyama, Kenji; and Tahara, Koichi, 3,801,471.
Tajima, Tatsuya: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,801,323.
Takahashi, Hideo: *See—*
Fukugami, Goro; Tamura, Chiaki; Majima, Hideji; and Takahashi, Hideo, 3,801,089.
Takahashi, Mitsuano: *See—*
Kobayashi, Masamitsu; and Takahashi, Mitsuano, 3,801,704.
Takasago Perfumery Co., Ltd.: *See—*
Komatsu, Akira; Akutagawa, Susumu; and Someya, Taichi, 3,801,668.
Takata, Hirokichi: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.
Takata, Nobuo, to Toshin Seiki Company, Ltd. One way clutch. 3,800,927, Cl. 192-45.000.
Takebayasi, Akira: *See—*
Kurihara, Masayuki; Takebayasi, Akira; Goto, Kazuo; Higuchi, Norio; Kimata, Ryuzo; Katoh, Jun; and Minyu, Toshikazu, 3,801,726.
Takeda Chemical Industries, Ltd.: *See—*
Arima, Kei; Nogami, Ikuo; and Yoneda, Masahiko, 3,801,457.
Kimoto, Ryuzo; Imaoka, Kazuo; Isurushima, Masaaki; and Umemoto, Kojiro, 3,801,622.
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.
Suzuki, Takashi; Sumino, Yasuhiro; Akiyama, Shunichi; and Fukuda, Hideo, 3,801,455.
Takeda, Kyosuke: *See—*
Kobatake, Takashi; Manabe, Jiro; Imamura, Masaharu; Takeda, Kyosuke; Daimoto, Tokinori; and Takata, Hirokichi, 3,801,030.
Taketsume, Yukuo: *See—*
Ogura, Hirukatsu; Takizawa, Tatsuo; Ono, Yoshizo; and Taketsume, Yukuo, 3,801,339.
Takeuchi, Tetsuo; and Orimoto, Tadashi, to Mitsui Shipbuilding and Engineering Co. Ltd. Pipe storing rack. 3,800,980, Cl. 221-195.000.
Takimoto, Yasuyuki; Yoshikawa, Toshikazu; Sakurai, Kiyohi; Umeda, Yasusi; and Hirayama, Takeshi, to Nippon Paint Company, Ltd. Photopolymer printing plate and its production. 3,801,328, Cl. 96-115.00p.
Takizawa, Tatsuo: *See—*
Ogura, Hirukatsu; Takizawa, Tatsuo; Ono, Yoshizo; and Taketsume, Yukuo, 3,801,339.
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, to Textilausruestungs-Gesellschaft Schroers & Co. Apparatus for dispensing liquids, particularly dyes. 3,800,568, Cl. 68-205.00r.
Tamai, Yasuo: *See—*
Matsumoto, Seiji; and Tamai, Yasuo, 3,800,744.
Tamplen, Jack W. Pressure balanced percussion firing system. 3,800,705, Cl. 102-20.000.
Tamura, Chiaki: *See—*
Fukugami, Goro; Tamura, Chiaki; Majima, Hideji; and Takahashi, Hideo, 3,801,089.
Tanaka, Hiroshi; and Komiya, Takao, to Canon Camera Kabushiki Kaisha. Electrophotographic plate. 3,801,317, Cl. 96-1.800.
Tanaka, Kojiro: *See—*
Matsumura, Toshio; and Tanaka, Kojiro, 3,800,524.
Tanaka, Mitsugu: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,801,323.
Tanaka, Mitsuyoshi: *See—*
Onoe, Katsuhiko; and Tanaka, Mitsuyoshi, 3,801,777.
Tanasescu, Ovidiu: *See—*
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.
Taniguchi, Kenji: *See—*
Imaizumi, Ichiro; Taniguchi, Kenji; and Hotta, Atsuo, 3,801,886.
Tanner, David J., to Kayford Manufacturing Company Limited. Firelighter composition in gelled form which solidifies upon ignition. 3,801,292, Cl. 44-7.00c.
Tanner, David N., to Arudale Manufacturers, Inc. Flexible filter element. 3,800,512, Cl. 55-357.000.

Tarves, Robert J., Jr., to Air Pollution Specialties, Inc. Method and apparatus for removing oil from effluent gas. 3,800,505, Cl. 55-8.000.

Tassara, Pino, to Metal Lux S.p.A. Apparatus for coloring articles, for instance lens for spectacles. 3,800,738, Cl. 118-8;000.

Tassie, Douglas Pray; and Hougland, Russell Allyn, to General Electric Company. Ammunition handling system. 3,800,658, Cl. 89-33.00d.

Tassie, Douglas Pray, to General Electric Company. Conveyor mechanism. 3,800,937, Cl. 198-131.000.

Tasso, Antoine. Multiphase signal generator. 3,801,835, Cl. 307-293.000.

Tate, David P.: *See—*
Webb, Frederick J.; and Tate, David P., 3,801,500.

Tausch, Winfried: *See—*
Donath, Hans; Beier, Hans-Peter; Otto, Gottfried; Mutz, Werner; and Tausch, Winfried, 3,801,146.

Taylor, Betty L. Portable collapsible signal device. 3,800,730, Cl. 116-114.00r.

Taylor, Brian W.: *See—*
Kobylinski, Thaddeus P.; and Taylor, Brian W., 3,801,697.

Taylor, James Clifford, to Dominon Bridge Company Limited. Barge. 3,800,721, Cl. 114-.50f.

Taylor, Lawrence: *See—*
Hasler, William Sandford; and Taylor, Lawrence, 3,800,642.

Taylor, Robert E. Container construction. 3,801,001, Cl. 229-39.00r.

Taylor, Terence Francis Edward, to International Standard Electric Corporation. Printed and carriage control therefor. 3,800,933, Cl. 197-49.000.

Taylor, William H., to Petro-Tex Chemical Corporation. Anti-foaming process by the addition of a quaternary ammonium salt. 3,801,475, Cl. 203-20.000.

Teare, Melvin John, to RCA Limited. Low noise detector amplifier. 3,801,933, Cl. 330-35.000.

Teikoku Kako Company Limited: *See—*
Kobayashi, Masamitsu; and Takahashi, Mitsuano, 3,801,704.

Teldec Telefunken-Decca Schallplatten GmbH: *See—*
Roschmann, Klaus; and Wuhle, Alwin, 3,801,476.

Telecommunications Radioelectriques et Telepkoniques T.R.T.: *See—*
Daguet, Jacques Lucien; and Bellanger, Maurice Georges, 3,801,913.

Teledyne Industries, Inc.; d/b/a Teledyne Aqua Tec Company: *See—*
Trenary, John M.; and Smith, David W., 3,801,019.

Telefunken Patentverwertungsgesellschaft G.m.b.H.: *See—*
Joschko, Gunter, 3,801,535.

Teletype Corporation: *See—*
Gorski, Stanley R., 3,801,826.

Temple, Ernest E., to Mine Safety Appliances Company. Water pressure actuated electric switch for cable cutter. 3,801,759, Cl. 200-61.080.

Tenne, Lave: *See—*
Johansson, Lennart Ragnar; and Tenne, Lave, 3,800,684.

Tenneco Oil Company: *See—*
Eggleston, James F., 3,800,876.

Tenteris, Ansis U.; and Wetzel, Bruce W., to Jobst Institute, Inc. Body support cushioning system with sideboard positioning mechanism. 3,800,342, Cl. 5-348.0wb.

Terao, Motoyasu, to Hitachi, Ltd. Optical memory device. 3,801,966, Cl. 340-173.0lm.

Terry, Rupert Douglas, to Johns-Mansville Corporation. Jacket for cylindrical articles. 3,800,834, Cl. 138-151.000.

Teschev, Alexandr Mikhailovich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850

Tetenbaum, Marvin T.; and Stone, Herman, to Allied Chemical Corporation. Flame retardant polyamide compositions. 3,801,533, Cl. 260-45.80n.

Teufel, Helmut: *See—*
Seeger, Ernst; Engel, Wolfhard; Teufel, Helmut; and Engelhardt, Gunther, 3,801,654.

Texaco Inc.: *See—*
Arnold, Dan McCay, 3,801,816.
Cross, Edward A.; and Bright, Gordon S., 3,801,506.
Knifton, John F., 3,801,640.
Pitts, Robert W., Jr., 3,800,870.
Stone, Aubrey L., 3,801,504.
Umphenour, Charles F.; and Calderon, Reynaldo, 3,800,832.
Youngblood, Douglas J.; Kuhlmann, Robert E.; and Pratt, Roy E., 3,801,493.

Texas Instruments Incorporated: *See—*
Mueller, Hans; and Voigt, William C., 3,801,924.

Texpatent GmbH (S.a.r.l.): *See—*
Fecker, Josef, 3,800,559.

Textilausruestungs-Gesellschaft Schroers & Co.: *See—*
Takriti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,800,568.

Textron Inc.: *See—*
Carlson, Lowell D.; Reese, Gerald D.; and Shank, Gerald G., 3,800,754.
Wright, Raymond Grenville Whitehead; and Simpson, Anthony Yelverton, 3,800,905.

Thelen, Edmund J., to Packaging Corporation. Handle construction. 3,801,012, Cl. 229-52.00a.

Thiersch, Friedrich: *See—*
Knappstein, Johannes; Thiersch, Friedrich; and Schuch, Werner, 3,801,470.

Thomas Industries, Inc.: *See—*
Kemmerer, Wayne J.; Dicola, Vincent C.; and Raddatz, Gene R., 3,801,951.

Thomas, Michael D. Programmed pill dispenser. 3,800,940, Cl. 206-42.000.

Thompson, Albert L., to General Motors Corporation. Exhaust gas recirculating valve. 3,800,765, Cl. 123-119.00a.

Thompson, Charles L.: *See—*
Wilkes, Don Earl; and Thompson, Charles L., 3,801,919.

Thompson, Harold A. Water reacting means facilitating loading of boat trailers. 3,800,968, Cl. 214-500.000.

Thompson, Robert R.; Duschatko, Robert W.; and Nash, Arthur J., to Amoco Production Company. Critical carbonate minerals in geochemical prospecting. 3,801,281, Cl. 23-230.00p.

Thompson, Woodrow F. Load levelling and anti-sway striler hitch. 3,801,133, Cl. 280-406.00a.

Thomson-CSF: *See—*
Lamy, Michel; and Vallet, Michel, 3,801,939.

Thorn, Caryl A.: *See—*
Moore, Brian B.; and Thorn, Caryl A., 3,801,962.

Thornhill, Jan Pass, 30% to Lee, Raymond, Organization, Inc., The. Disposable footwear with grounding means. 3,800,446, Cl. 36-7.10r.

Thwaites, Leslie Basil. Vehicle chassis. 3,800,899, Cl. 180-49.000.

Tidbury, Gordon Thomas: *See—*
Malashenko, Alexander; Tidbury, Gordon Thomas; and Futcher, Ralph James, 3,801,435.

Tiemann, Jerome J., to General Electric Company. Surface charge signal correlator. 3,801,883, Cl. 317-235.00r.

Tiers, George Van Dyke: *See—*
Allen, Michael George; Buchholtz, Theodore; and Tiers, George Van Dyke, 3,801,421.

Tikhonovsky, Alexel Lavrentievich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Selenky, Alexandr Mikhailovich; Teschev, Alexandr Mikhailovich; Tikhonovsky, Alexel Lavrentievich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; and Kucherenko, Pavel Petrovich, 3,800,850

Tiltjens, Eduard Willem, to U.S. Philips Corporation. Cutter for a dry-shaver driven by a motor. 3,800,417, Cl. 30-43.600.

Time Computer, Inc., mesne: *See—*
Bergey, John M., 3,800,525.

Timesavers, Inc.: *See—*
Kiser, Fred W., 3,801,293.

Tims, Thomas William; and Pemberton, Robert Tudor. Universally mountable windshield. 3,801,152, Cl. 296-78.100.

Tintometer Limited, The: *See—*
Hunt, Robert William Gainer; and Dain, Stephen John, 3,801,188.

Tkachuk, Rostislav Arsentievich: *See—*
Yavorsky, Arsenty Vasilievich; Tkachuk, Rostislav Arsentievich; Ostapchuk, Jury Grigorievich; Farber, Grigory Lvovich; Bondar, Viktor Stepanovich; and Pryalochnikov, Gennady Vasilievich, 3,801,238.

Tobin, Michael F., to General Motors Corporation. Universal joint with flexibly connected offset cross pins. 3,800,557, Cl. 64-13.000.

Tokuno, Masateru, to Shizuoka-Kogyo Co., Ltd. High speed multi-cylinder machine for manufacturing a multi-ply paper. 3,801,437, Cl. 162-274.000.

Tokyo Gas Co. Ltd.: *See—*
Kitamura, Ryuzo, 3,800,685.
Otsuka, Katsuhiko; and Katayama Takao, 3,800,686.

Tokyo Kagaku Sangyo Kabushiki Kaisha: *See—*
Nobe, Akira; and Nakae, Toshitaka, 3,801,467.

Tokyo Rokuon Kogyo Kabushiki Kaisha: *See—*
Hayashi, Keizo, 3,801,744.

Toland, William G.: *See—*
Kurkov, Victor P.; Lapporte, Seymour J.; and Toland, William G., 3,801,627.

Tolstoguzov, Vladimir Borisovich; Mzhelsky, Alexandr Ivanovich; Ershova, Vera Alexandrovna; Braudo, Evgeny Evgenievich; and Mikheeva, Natalia Vasilievna. Method of producing protein-containing lamellar structure meat substitute. 3,801,713, Cl. 426-239.000.

Tomodo, Masayasu: *See—*
Kometani, Yotaka; Nakamura, Naoya; Nakagawa, Shinichi; Rakaoawa, Shinichi; Furukawa, Yasuyoshi; Tomodo, Masayasu; Oka, Masahiko; Nakagawa, Tsuneo; and Miyata, Yasuo, 3,801,552.

Tompkins, Russell E.: *See—*
Corman, James C.; Edgar, Robert F.; McLaughlin, Michael H.; and Tompkins, Russell E., 3,801,843.

Toray Industries, Inc.: *See—*
Fusayama, Takeo; Hayashi, Kenji; Asamizu, Yoshio; Endo, Meitaro; and Shinohara, Yasuo, 3,801,368.

Toromanoff, Edmond: *See—*
Martel, Jacques; Toromanoff, Edmond; and Buendia, Jean, 3,801,623.

Toshin Seiki Company, Ltd.: *See—*
Takata, Nobuo, 3,800,927.

Touchman, William S., to National Cash Register Company, The. Stepping motor. 3,801,842, Cl. 310-49.000.

Toussaint, Robert; and Boonen, Henry, to Glaverbel S.A. Process and apparatus for drawing a continuous ribbon of glass. 3,801,297, Cl. 65-95.000.

Toy, Arthur D. F.; and Uhing, Eugene A., to Stauffer Chemical Company. Bis (alpha, beta-dihaloalkyl) 1-acyloxyalkane phosphonate flame retardants. 3,801,542, Cl. 260-45.85r.

Toyama Chemical Co. Ltd.: *See—*
Kodama, Yutaka; Kodama, Tsutomu; Nakabayashi, Masao; and Hirano, Hiroshi, 3,801,683.

Toyo Kogyo Co., Ltd.: *See—*
Omonishi, Shitomo, 3,800,661.

Toyoda Koki Kabushiki Kaisha: *See—*
Kobayashi, Akiyoshi; and Miyagawa, Kiyoshi, 3,800,776.

Toyoda, Takeshi: *See—*
Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, 3,801,633.

Toyoshima, Shigeshi; Kanao, Seizo; Toyoda, Takeshi; and Suyama, Tadashi, to Ajinomoto Co., Inc. N-substituted amino acids having antiviral effects. 3,801,633, Cl. 260-518.00r.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Jira, Arata, 3,801,123.
Matsuoka, Chikara, 3,801,209.

Tracked Hovercraft Limited: *See—*
English, Christopher Durrant; Fuller, Brian Robert; Bone, Geoffrey Edward; Bishop, Peter Douglas; and Birchnall, Eric James, 3,800,708.

Tracy, Richard R. Winged sailing craft. 3,800,724, Cl. 114-39.000.

Tramontini, Vernon N.: *See—*
Treland, Robert G.; and Tramontini, Vernon N., 3,800,866.

Transfer Systems Incorporated: *See—*
Jones, Cecil R., 3,801,441.
Jones, Cecil R., 3,801,453.

Treadwell, Leo E. Spring trap setter. 3,800,463, Cl. 43-97.000.

Treaster, Mahlon L. Amusement device including spherical balls and track therefor with obscured depressions therein. 3,801,094, Cl. 272-8.00r.

Trei, John E.: *See—*
Parish, Roger C.; and Trei, John E., 3,801,710.

Treland, Robert G.; and Tramontini, Vernon N., to Stewart-Warner Corporation. Radiator assembly. 3,800,866, Cl. 165-122.000.

Trenary, John M.; and Smith, David W., to Teledyne Industries, Inc.; d/b/a Teledyne Aqua Tec Company. Spray nozzle. 3,801,019, Cl. 239-383.000.

Tri-Men Manufacturing, Inc.: *See—*
Brown, Richard J., 3,801,944.

Tri-Ordinate Corporation: *See—*
Hoglund, Nils O., 3,800,621.

Trioteam A/S: *See—*
Kjellberg, Finn Andre; Lemvig, Svend Edvard Nielsen; and Kjellberg, Bent Ivan, 3,800,916.

Triplex Safety Glass Company Limited: *See—*
Casserley, Barrie, 3,801,397.

Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, toConsiluil National Pentru Stiinta si Tehnologie. Procedure and installation for continuous steel making. 3,800,630, Cl. 75-49.000.

Triumph Werke Nuernberg, A.G.: *See—*
Decker, Herbert, 3,800,934.

Trolle, Sten: *See—*
Jonssen, Finn L.; and Trolle, Sten, 3,800,695.

Troncoso, Fernando, Jr. Archery bow string release device. 3,800,774, Cl. 124-35.00a.

Truitt, Robert B.: *See—*
Wilkinson, Robert E.; Truitt, Robert B.; Hunter, Richard P.; and Bennett, Ronald E., 3,801,727.

Trunnell, Harold K. Irrigation pipe mover. 3,800,820, Cl. 137-344.000.

TRW Inc.: *See—*
Dumeah, Peter J., 3,800,407.
Goshgarian, Haig, 3,801,938.
Hagan, Melvin A.; and Batista, Roy I., 3,800,406.
Heflinger, Lee O.; and Wuerker, Ralph F., 3,801,931.
Herbenar, Edward J.; and Calvin, Louis E., 3,801,207.
Mueller, Milton W., 3,801,228.
Wuerker, Ralph F.; and Heflinger, Lee O., 3,801,930.

Trygon Electronics Inc.: *See—*
Spiegel, Robert M., 3,801,894.

Tscheck, Wolfgang: *See—*
Lohr, Alfred; Schwan, Wolfgang; and Tscheck, Wolfgang, 3,800,778.

Tsuchiya, Yoshinori: *See—*
Arai, Atsuaki; Ohkubo, Kinji; Tajima, Tatsuya; Tanaka, Mitsugu; and Tsuchiya, Yoshinori, 3,801,323.

Tsujimura, Tozaburo: *See—*
Nishimura, Matsuo; and Tsujimura, Tozaburo, 3,801,801.

Tsukuma, Shin; and Kobayashi, Kunito, to Kamitsu Seisakusho Ltd. Yarn traversing drum used for yarn winders. 3,801,034, Cl. 242-43.200.

Tuck, Richard L., Sr.: *See—*
Stark, Marvin; Jones Jerry L.; Tuck, Richard L., Sr.; and Aquino, Herman A., 3,800,714.

Tuffile, Fred M.: *See—*
Saas, Hosny Y.; Tuffile, Fred M.; Cunningham, Andrew J.; and Franco, Philip, 3,800,809.

Tunc, Deger, to Johnson and Johnson. Body fluid barrier films. 3,800,797, Cl. 128-290.00r.

Turner, Alfrey, Jr.: *See—*
Schrenk, Walter J.; Chisholm, Douglas S.; Cleereman, Kenneth J.; and Turner, Alfrey, Jr., 3,801,429.

Tuttle, James H., to Pullman Incorporated. Hopper car door activating mechanism. 3,800,711, Cl. 105-251.000.

Tveter, Richard S., to Himmelstein, S., and Company. Hollow reaction torquemeter. 3,800,591, Cl. 73-136.00a.

Tweed, Donald G.: *See—*
Stumpf, Gene L.; and Tweed, Donald G., 3,801,873.

Tyco Laboratories, Inc.: *See—*
Mlavsky, Abraham I., 3,801,309.

Tyler, Patrick J.: *See—*
Hultquist, Gordon; and Tyler, Patrick J., 3,801,154.

Tyo, James: *See—*
Finocchiaro, Harry S.; and Tyo, James, 3,800,959.

U-S Safety Trolly Corporation: *See—*
Ross, Donald R., Jr., 3,801,751.

Uchida, Isamu, to Minolta Camera Kabushiki Kaisha. Photographic viewfinder arrangement. 3,800,655, Cl. 354-225.000.

Uchida, Teiji: *See—*
Kitano, Ichiro; Koizumi, Ken; Matsumura, Hiroyoshi; Mukai, Kunihiko; and Uchida, Teiji, 3,801,181.

Uddeholms Aktiebolag: *See—*
Dahlberg, Jan Anders; and Christiansen, Virve Oivikki, 3,801,659.

Uhing, Eugene A.: *See—*
Toy, Arthur D. F.; and Uhing, Eugene A., 3,801,542.

Ujiie, Aktra. Method and apparatus for manufacturing spherical metallic vessels or hemispherical vessel heads. 3,801,771, Cl. 219-76.000.

Umeda, Yasusi: *See—*
Takimoto, Yasuyuki; Yoshikawa, Toshikazu; Sakurai, Kiyohi; Umeda, Yasusi; and Hirayama, Takeshi, 3,801,328.

Umemoto, Kojiro: *See—*
Kimoto, Ryuzo; Imaoka, Kazuo; Isurushima, Masaaki; and Umemoto, Kojiro, 3,801,622.

Umphenour, Charles F.; and Calderon, Reynaldo, to Texaco Inc. Air gun firing assembly. 3,800,832, Cl. 137-625.650.

Uniline Corporation: *See—*
Martin, William, 3,800,701.

Union Carbide Corporation: *See—*
Anderson, John Erling, 3,801,082.
Chuang, Vincent T., 3,801,615.
Litteral, Carl J., 3,801,616.
Sandner, Michael Ray; and Osborn, Claiborn Lee, 3,801,329.
Shapiro, Stephen I., 3,801,283.

Union Oil Company of California: *See—*
Booth, Frank B., 3,801,646.

Uniroyal Englebert France S.A.: *See—*
Leblond, Jean; and Biet, Jean, 3,800,605.

Unisearch Limited: *See—*
Robins, Robert George; and Edenborough, Barry William, 3,801,701.

United Aircraft Corporation: *See—*
Dews, George H.; and Vine, Raymond W., 3,801,374.
Marshall, Richard L.; and Sullivan, Dennis J., 3,800,527.
Shaw, Robert H., 3,801,372.
Violette, John A., 3,801,222.

United Carbide Corporation: *See—*
Martin, Sterling T., 3,801,004.

United Kingdom Atomic Energy Authority: *See—*
Milburn, George, 3,801,452.

United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Samson, David, 3,801,489.

United States of America : *See—*
Raymond, Rodney L., 3,800,972.

Agriculture: *See—*
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,800,375.
Lewis, John B.; and Hedrick, Glen W., 3,801,649.
Magne, Frank C.; Mod, Robert R.; and Sumrill, Gene, 3,801,525.
Magne, Frank C.; Mod, Robert R.; Sumrell, Gene; and Parker, Winfred E., 3,801,609.

Air Force: *See—*
Breaux, Onezime P., 3,801,202.
Coldie, Harry, 3,801,932.
Dauksys, Richard J., 3,801,350.
Dauksys, Richard J., 3,801,351.
Hosterman, Thomas J.; and Goodell, Frank S., 3,801,051.
Murakami, Robert E., 3,800,703.

Army: *See—*
Gulbierz, Joseph E., 3,801,416.
Hill, William E., 3,801,647.
Hong, Van Y. S., 3,801,505.
Shipman, John W.; and Rahman, Abdul R., 3,801,714.

Army, mesne: *See—*
Ardis, Alan E.; and Natoli, Frank S., 3,801,707.
Scruggs, James A., 3,801,657.

Atomic Energy Commission: *See—*
Cornelis, Clarence C.; and Hanna, Harry A., 3,801,418.
Johnson, Everett R.; and Holtzcheiter, Earl W., Jr., 3,801,484.
Nance, Robert L.; Leary, Joseph A.; and Mullins, Lawrence J., 3,801,700.

Sparber, Frederick J.; and Whiting, Glen H., 3,801,446.
Steinberg, Meyer; and Farber, Gerald, 3,801,358.
Wilkins, Daniel R.; and Hill, Paul R., 3,801,445.

Atomic Energy Commission, mesne: *See*—
Ohkawa, Tihiro, 3,801,438.

Interior: *See*—
Berber, John S.; and Rice, Richard L., 3,801,342.

National Aeronautics and Space Administration; with respect to an invention of:
Bilow, Norman; and Akawie, Richard I. Thiophenyl ether disiloxanes and trisiloxanes useful as lubricant fluids. 3,801,617, Cl. 260-448.20n.

Navy: *See*—
Albares, Donald J., 3,800,906.
Alpers, Frederick C., 3,801,981.
Bewell, Robert G. S.; Austin, Carl C.; Halsey, Carl C.; and Smith, Myron R., 3,800,704.
Howell, Clarence F.; Brownrigg, John D.; and Cooper, George H., 3,800,507.
Hutchings, Thomas J.; and Zingery, Wilbur L., 3,800,594.
Milne, David T.; and Cook, George W., 3,801,918.
Soulant, Herman A., Jr., 3,800,601.
Ward, John L., 3,801,882.
Woolley, Richard L., 3,801,983.

Navy, mesne: *See*—
Weinstein, Arnold, 3,801,917.

United States Register Company: *See*—
Parrish, Wilbert J., 3,800,688.

United States Steel Corporation: *See*—
Bode, Charles H., Jr., 3,800,854.
Boto, Louis, 3,801,058.
Nishkian, Martin A.; and Nuttall, Wayne E., 3,800,975.

Universal Oil Products Company: *See*—
Rausch, Richard E., 3,801,498.

University of Stratchclyde, The: *See*—
Wood, Hamish Christopher Swan; and Stuart, Alexander, 3,801,643.

Unterstenhofer, Gunter: *See*—
Hoffman, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,801,679.

Upjohn Company, The: *See*—
Shah, Ashok C.; and Peot, Craig B., 3,801,280.

Upton, Lee O., to American Optical Corporation. Lead borosilicate optical glass adaptable to fusion with photochromic glass to produce multifocal lens. 3,801,336, Cl. 106-53.000.

Urade, Toshinori: *See*—
Andoh, Shizuo; Urade, Toshinori; and Hirose, Tadatsugu, 3,801,851.

Urban, Ralf: *See*—
Keser, Fridolin; and Urban, Ralf, 3,800,894.

U.S. Philips Corporation: *See*—
Arts, Gerardus Wilhelmus Maria, 3,801,814.
Buchner, Robert Bertold, 3,801,746.
Gerlach, Hans Georg, 3,801,855.
James, Pierre Lucien Jules, 3,801,789.
Malburg, Dieter, 3,801,029.
Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus Maria, 3,801,184.
Mitchell, Richard Frank, 3,801,935.
Koschmann, Peter, 3,801,936.
Sharp, Denis, 3,801,161.
Stelwagen, Jan; and Van Loon, Huibert, 3,800,622.
Tiltjens, Eduard Willem, 3,800,417.
Van Den Berge, Hendrik Jan, 3,801,178.
Van Gerwen, Petrus Josephus, 3,801,934.
Van Roosmalen, Johannes Hendrikus Theodorus; Haans, Petrus Franciscus Antonius; Van Esdonk, Johannes; and Hornman, Johannes Petrus, 3,801,848.
Von Horsten, Hans-Joachim, 3,801,911.
Wolf, Gerrit, 3,801,921.

USC Incorporated: *See*—
Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,801,440.

USM Corporation: *See*—
Kyritsis, William T.; and Simmonds, Robert C., Jr., 3,801,686.

Uson Corporation: *See*—
Delatorre, Leroy C.; Rapson, William J., Jr.; and Lemson, Paul H., 3,800,586.

Vaast, Charles, to Societe Beaulieu S.A. Driving device for a sound recording substrate. 3,801,192, Cl. 351-14.000.

Valentine, Edith. Combination sheet and pillowcase. 3,800,340, Cl. 5-334.00r.

Valentine, Harry M., to Bendix Corporation, The. Breathing and failure detection system for spring brakes. 3,800,668, Cl. 91-399.000.

Valeron Corporation, The: *See*—
Hopkins, David Alan, 3,800,379.

Vallet, Michel: *See*—
Lamy, Michel; and Vallet, Michel, 3,801,939.

Valleylab, Inc.: *See*—
Morrison, Charles F., Jr., 3,801,766.
Newton, David W., 3,801,800.

Valmet Oy: *See*—
Skytta, Osmo, 3,800,357.

Van Andel, Eleonoor, to Akzo N.V. Current measuring apparatus employing magnetic switch. 3,801,908, Cl. 324-117.00r.

Van Cakenberghe, Jean Lear, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Plasma deposition of thin layers on substrates. 3,801,355, Cl. 117-93.1gd.

Van Den Berge, Hendrik Jan, to U.S. Philips Corporation. Method of providing support for conductors of an electric filament or discharge lamp. 3,801,178, Cl. 316-20.000.

van der Linde, Aart: *See*—
Piepers, Gijsbrecht Gerhardus; Vons, Leonard Hendrik; van der Linde, Aart; and Ljbrink, Eduard, 3,801,088.

Van Derhei, Vivian S. Rotatable pool table with ball biasing braking structure. 3,801,097, Cl. 273-3.00b.

Van Doorne's Aanhangwagenfabriek N.V.: *See*—
Kuiper, Christiaan, 3,800,659.

Van Dorn Company: *See*—
Placek, Eugene W., 3,800,858.

Van Elden, Hendricus: *See*—
Nusser, Hermann; Van Elden, Hendricus; and Ebert, Jurgen, 3,801,231.

Van Esdonk, Johannes: *See*—
Merz, Josef; Van Esdonk, Johannes; and Janssen, Joannes Franciscus Maria, 3,801,184.
Van Roosmalen, Johannes Hendrikus Theodorus; Haans, Petrus Franciscus Antonius; Van Esdonk, Johannes; and Hornman, Johannes Petrus, 3,801,848.

Van Gerwen, Petrus Josephus, to U.S. Philips Corporation. Filter for binary pulse signals. 3,801,934, Cl. 333-70.00t.

Van Hattem, Nicolaas: *See*—
Plate, Geerardus G.; and Van Hattem, Nicolaas, 3,801,409.

Van Laethem, Robert; and Baudin, Pol, to Glaverbel S.A. Multiple glazing panel and manufacturing method therefor. 3,801,423, Cl. 161-117.000.

Van Loon, Huibert: *See*—
Stelwagen, Jan; and Van Loon, Huibert, 3,800,567.
Stelwagen, Jan; and Van Loon, Huibert, 3,800,622.

Van Roosmalen, Johannes Hendrikus Theodorus; Haans, Petrus Franciscus Antonius; Van Esdonk, Johannes; and Hornman, Johannes Petrus, to U.S. Philips Corporation. Television camera tube with mounting assembly for grid adjacent photoconductor. 3,801,848, Cl. 13-65.00a.

Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Composite nitrided articles. 3,801,381, Cl. 148-31.500.

Vanes, Willem Lodewijk: *See*—
Wisse, Jan Hendrik; and Vanes, Willem Lodewijk, 3,801,179.

Varian Associates: *See*—
Edgecumbe, John, 3,801,849.
Giebeler, Robert Henry, 3,801,854.

Varta Aktiengesellschaft: *See*—
Nijhawan, Sobash, 3,801,310.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Coating composition of a silicone fluid, a silicone resin and a zirconium silicate hardening agent. 3,801,522, Cl. 260-29.10r.

Vautrin, Gerard C.: *See*—
Queffeulou, Jean-Yves; and Vautrin, Gerard C., 3,801,747.

VEB Textilkombinat Cottbus: *See*—
Heger, Adolf; and Wittig, Frank, 3,801,478.

Veenstra, Melle: *See*—
Molenaar, Albert Meijlom; and Veenstra, Melle, 3,800,690.

Veglia, Bartolo, to Riv-Skf Officine De Villar Perosa S.p.A. Spacer cage for rolling bearings. 3,801,172, Cl. 308-217.000.

Veil, Karl: *See*—
Lutz, Gerhard; and Veil, Karl, 3,800,673.

Velicov, Corneliu: *See*—
Tripsa, Iosif; Potoceanu, Ion; Nisipeanu, Ilie; Velicov, Corneliu; Popescu, Constantin; Cazan, Cornel; Kraft, Nathan; Driscu, Gheorghe; Martin, Ilie; Dulama,Dan; Tanasescu, Ovidiu; Deica, Nicolae; Berceanu, Edmond; Cosma, Dante; and Furnicescu, Nicolae, 3,00,630.

Ventron Corporation: *See*—
Cadmus, Eugene L., 3,801,332.

Vepa AG: *See*—
Fleissner, Heinz, 3,800,373.

Ver Slois, David G. Snowfall level detector. 3,801,779, Cl. 250-222.00r.

Verbeke, Roger; and Heylen, Paul, to Belgonucleaire and Centre d'Etude de L'Energie Nucleaire. Peocess and apparatus for the storage of nuclear-irradiated fuel elements. 3,800,857, Cl. 165-1.000.

Vereinigte Baubeschlagfabriken Gretsch & Co. G.m.b.H.: *See*—
Sittmann, Brigitte, 3,801,120.

Vereinigte Flugtechnische Werk-Fokker, GmbH: *See*—
Riccius, Rolf, 3,801,048.

Verma, Hart Singh: *See*—
Malgdefessll, Heinz; and Verma, Hart Singh, 3,801,850.

Vermeulen, Emile Raymond, to Sidaplax N.V. Closuring containers. 3,800,502, Cl. 53-329.000.

Vermont American Corporation: *See*—
McCord, Wilfred M., Jr., 3,800,840.

Vick, Merlin E. Wheel chock. 3,800,917, Cl. 188-32.000.

Victor Comptometer Corporation: *See*—
Fischer, Earl L., 3,800,773.

Victor Products (Wallsend) Limited: *See*—
Roberts, Frank B., 3,801,865.

Vilceanu, Radu: *See—*
Schmidt, Walter-Ernest; and Vilceanu, Radu, 3,801,579.

Vincent, Arthur Leonard, to International Telephone and Telegraph Corporation. Sample extraction method and apparatus. 3,800,595, Cl. 73-19.000.

Vincent, Floyd O.: *See—*
Ostuni, Joseph J.; and Vincent, Floyd O., 3,801,915.

Vincent, Michel; Remond, Georges; and Poignant, Jean-Claude, to Societe en nom Collectif "Science Union et Cie" and Societe Francaise de Recherche Medicale. Cyclohexenyl acetic acid compounds. 3,801,628, Cl. 260-500.50h.

Vine, Raymond W.: *See—*
Dews, George H.; and Vine, Raymond W., 3,801,374.

Violette, John A., to United Aircraft Corporation. Platform for compressor or fan blade. 3,801,222, Cl. 416-220.000.

Vishay Intertechnology, Inc.: *See—*
Ellis, Greer, 3,801,340.

Visor, Frederick C., to Flents Products Co., Inc. Adjustable ear plug. 3,800,791, Cl. 128-152.000.

Visos, Charles D.; Love, John J.; and Smith, Carl A., to Emerson Electric Co. Adjustable stepped-opening diaphragm gas valve. 3,800,823, Cl. 137-489.500.

Visual Data Corporation: *See—*
Kiehl, Paul G., 3,800,452.

Vogt, Clifford M.; Soehngen, John W.; and Polise, Joseph C., to Celanese Corporation. Varying density cartridge filters. 3,801,400, Cl. 156-167.000.

Voigt, William C.: *See—*
Mueller, Hans; and Voigt, William C., 3,801,924.

Voith, J. M., GmbH: *See—*
Prechtel, Klaus, 3,801,436.

Volkswagenwerk Aktiengesellschaft: *See—*
Gospoear, Wwinhard, 3,800,772.
Oberpichler, Gerd, 3,800,627.

Vollman, Geinrich: *See—*
Bien, Hans-Samuel; Hohmann, Walter; Vollman, Geinrich; and Leister, Heinrich, 3,801,606.

Von Glahn, William F.; and Shell, Ronald G., to Burroughs Corporation. Drum driven document back-up roller. 3,801,804, Cl. 235-61.11d.

Von Horsten, Hans-Joachim, to U.S. Philips Corporation. Synchronous FM-modem. 3,801,911, Cl. 325-30.000.

Von Ruden Manufacturing Company: *See—*
Von Ruden, Norbert A., 3,800,665.

Von Ruden, Norbert A., to Von Ruden Manufacturing Company. Fluid pressure operated reciprocatory motor. 3,800,665, Cl. 91-305.000.

Von Strandtmann, Maxmilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, to Warner-Lambert Company. Substituted-o-hydroxy-omega-(methylsulfinyl) acetophenones and process for producing same. 3,801,644, Cl. 260-592.000.

Vons, Leonard Hendrik: *See—*
Piepers, Gijsbrecht Gerhardus; Vons, Leonard Hendrik; van der Linde, Aart; and Ljbrink, Eduard, 3,801,088.

Voorhees, Francis W.: *See—*
Schultz, Peter C.; and Voorhees, Francis W., 3,801,294.

Vulcan Iron Works Inc.: *See—*
Warrington, Henry G., 3,800,888.

Vullo, William J.: *See—*
Wagner, George M.; and Vullo, William J., 3,801,272.

Vystrcil, Karel: *See—*
Riha, Miloslav; Vystrcil, Karel; Cernocky, Jiri; and Zgarda, Milan, 3,800,835.

Vyzkumny ustav bavlnarsky: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; and Slavik, Vlastislav, 3,800,521.

Wach, Andrew P., to Goodyear Tire & Rubber Company, The. Heavy duty V-belt. 3,800,610, Cl. 74-233.000.

Wachter, William J.: *See—*
Apt, Jerome, Jr.; Wachter, William J.; and Rohrer, Wesley M., Jr., 3,801,440.

Wada, Mitsuo: *See—*
Kojima, Kunio; Shimada, Kazuyuki; and Wada, Mitsuo, 3,801,364.

Wagner, Earl William: *See—*
Brehm, Ronald Carl; Folkenroth, Earl Ernest; and Wagner, Earl William, 3,800,389.

Wagner Electric Corporation: *See—*
Atkins, Carl E., 3,801,798.
Atkins, Carl E., 3,801,799.

Wagner, George M.; and Vullo, William J., to Hooker Chemical Corporation. Wool treating process. 3,801,272, Cl. 8-127.600.

Wagner, Hubert; and Moore, Darrlie D., to Sybron Corporation. Sterilizing apparatus for hydrophilic contact lenses. 3,801,278, Cl. 21-86.000.

Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, to Daimler-Benz Aktiengesellschaft. Hot gas engine constructed as rotary piston engine. 3,800,526, Cl. 60-519.000.

Wakimasu, Mitsuhiro: *See—*
Nakajima, Nobuo; Aoki, Hisashi; Fujino, Masahiko; Nishimura, Osamu; Wakimasu, Mitsuhiro; and Mano, Nitsuhiko, 3,801,563.

Walker, Alexander; and Williams, Michael Roger Lloyd, to British Nuclear Design & Construction Limited. Multiple standpipe-controlled core holddown mechansim for fluid-cooled nuclear reactors. 3,801,442, Cl. 176-29.000.

Walker, Clarence L., to Sherwood Medical Industries Inc. Urinary drainage collecting device. 3,800,795, Cl. 128-275.000.

Walker, James H., to Chevron Research Company. Process for alkyl orthosilicate. 3,801,618, Cl. 260-448.80a.

Walker, Roland: *See—*
Barwig, Karlhorst; and Walker, Roland, 3,801,802.

Wall, Ernst L.; and Niblack, Walter K., to Alpha Industries, Inc. Process for producing surface-oriented semiconduction device. 3,800,412, Cl. 29-578.000.

Walterscheild, Jean, GmbH, mesne: *See—*
Buthe, Theo; and Geisthoff, Hubert, 3,800,558.

Wankel G.m.b.H.: *See—*
Ruf, Max, 3,801,240.

Ward, Harold R.; and Hicks, Dewin D., to Eaton Corporation. Hydrostatic transmission control system. 3,800,535, Cl. 60-427.000.

Ward, John L., to United States of America, Navy. Thermo-electric mounting method for RF silicon power transistors. 3,801,882, Cl. 317-234.00r.

Ward, William E.: *See—*
Rampe, John F.; and Ward, William E., 3,800,478.

Ware Machine Works, Inc.: *See—*
Pilch, John S., 3,800,615.

Ware, Willard O.: *See—*
Schindler, Herbert; and Ware, Willard O., 3,800,748.

Warner-Lambert Company: *See—*
Von Strandtmann, Maxmilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,801,644.

Warrick, Ronald W.; and Faust, Robert N. Powder decapsulation and recovery method and apparatus. 3,800,399, Cl. 29-426.000.

Warrington, Henry G., to Vulcan Iron Works Inc. Cushion pot anvil with mechanical and molded joint. 3,800,888, Cl. 173-131.000.

Warwick, Edward H., to General Motors Corporation. Self-energized disc brake parking brake integral with a non-energized service disc brake. 3,800,920, Cl. 188-106.00f.

Warwick Electronics Inc.: *See—*
Kolomayets, George; and Reed, Martin C., 3,801,109.

Washburn, Selden G. Knife coulter for plow. 3,800,881, Cl. 172-165.000.

Watanabe, Shigenobu: *See—*
Miyata, Tomiaki; Hamada, Shinji; Watanabe, Shigenobu; and Ogawa, Toshiko, 3,800,432.

Waterhouse, George, to Scragg, Ernest, & Sons Limited. Apparatus for manufacturing filamentary and fibrous textile products from thermoplastic film. 3,801,252, Cl. 425-304.000.

Watkins, Harry J.: *See—*
Beall, George H.; Chyung, Chi-Kwun; and Watkins, Harry J., 3,801,295.

Watson, Billy Ray. Tubing anchors. 3,800,871, Cl. 166-250.000.

Watt, Ivan Falkland, to Anglo American Corporation of South Africa Limited. Decking device for mine cages and the like conveyances. 3,800,918, Cl. 187-73.000.

Wauk, Michael T., II, to Hughes Aircraft Company. Terminated acoustic wave device. 3,800,908, Cl. 181-.50r.

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Hillman, Saundra L.: *See*—
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Lewis, Harry T., Jr., and J. G. Getsinger. Production of nitrogen-phosphorus compounds. T921,003, 4–2–74, Cl. 71—32.

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Osborne, Charles E.: *See*—
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Sheme, Francis J., and S. L. Hillman. Polyester gel coats. T 921,005, 4–2–74, Cl. 260—827.

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Vinson, Paul, to Wolverine-Pentronix Inc. Powder compacting press. Re. 27,958, 4–2–74, Cl. 74—568.

Wieck, Gregory J. Reversible irrigation lines. Re. 27,956, 4–2–74, Cl. 239—212.

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1.6 3,800,373
15 3,800,372
72.14 3,800,374
72.16 3,800,375

CLASS 29
25.13 3,800,377
25.18 3,800,378
95R 3,800,379
3,800,380
132 3,800,366
3,800,381
148.4A 3,800,382
3,800,383
3,800,384
156.4R 3,800,385
157.1R 3,800,386
200B 3,800,387
200P 3,800,388
203D 3,800,389
203P 3,800,390
208B 3,801,291
255 3,800,391
401 3,800,392
407 3,800,393
408 3,800,394
413 3,800,395
3,800,396
416 3,800,397
423 3,800,398
426 3,800,399
3,800,400
432.2 3,800,401
445 3,800,402
3,800,403
464 3,800,404
473.9 3,800,405
480 3,800,406
481 3,800,407
493 3,800,408
3,800,409
570 3,800,410
571 3,800,411
578 3,800,412
592 3,800,413
599 3,800,414
611 3,800,415
625 3,800,416

CLASS 30
43.6 3,800,417
91.2 3,800,418
358 3,800,419

CLASS 32
14E 3,800,420

CLASS 33
22 3,800,421
169R 3,800,422
179.5 3,800,423
265 3,800,424
333 3,800,425
368 3,800,426

CLASS 34
10 3,800,427
20 3,800,428
79 3,800,429
99 3,800,431
151 3,800,432
155 3,800,433
3,800,434
3,800,435
156 3,800,438

CLASS 35
8R 3,800,436
9B 3,800,437
10.4 3,800,440
3,801,720
26 3,800,441
28 3,800,442
35H 3,800,443
48B 3,800,439

CLASS 36
7.1R 3,800,446
11.5 3,800,444
14 3,800,445

CLASS 37
41 3,800,447
43A 3,800,448

CLASS 40
2R 3,800,449
21C 3,800,450
34 3,800,451
63A 3,800,452
104A 3,800,453
109 3,800,454

CLASS 42
42R 3,800,455

CLASS 43
3 3,800,457
25.2 3,800,456
43.12 3,800,458
44.88 3,800,461
44.9 3,800,459
3,800,460
57 3,800,462
97 3,800,463
100 3,800,464
105 3,800,465

CLASS 44
4 3,800,466
7C 3,801,292

CLASS 46
1B 3,800,467

CLASS 47
28 3,800,468
34 3,800,469
36 3,800,470
38 3,800,471

CLASS 49
426 3,800,472

CLASS 51
5 3,800,473
9 3,800,474
62 3,800,475
118 3,800,476
139 3,800,477
163 3,800,478
236 3,800,479
249 3,800,480
326 3,801,293
337 3,800,481
339 3,800,482
356 Re.27,962
376 3,800,483

CLASS 52
69 3,800,484
90 3,800,485
98 3,800,486
169 3,800,487
208 3,800,489
212 3,800,488
250 3,800,490
602 3,800,491
662 3,800,492
745 3,800,493
753T 3,800,494

CLASS 53
14 3,800,497
52 3,800,495
64 3,800,496
77 3,800,498
168 3,800,499
180 3,800,500
315 3,800,501
329 3,800,502
390 3,800,503

CLASS 54
82 3,800,504

CLASS 55
8 3,800,505
16 3,800,506
33 3,800,507
96 3,800,508
131 3,800,509
158 3,800,510
228 3,800,511
238 3,800,513
319 3,800,514
354 3,800,516
357 3,800,512
387 3,800,515

CLASS 56
208 3,800,517
327R 3,800,518

CLASS 57
5 3,800,519
58.91 3,800,520
58.95 3,800,521
149 3,800,522

CLASS 58
23R 3,800,523
50R 3,800,524
3,800,525

CLASS 60
39.28R 3,800,534
39.72 3,800,527
227 3,800,528
241 3,800,529
261 3,800,530
263 3,800,531
274 3,800,532
3,800,533
3,800,772
427 3,800,535
456 3,800,536
477 3,800,537
519 3,800,526
562 3,800,538
3,800,539
581 3,800,540
588 3,800,541

CLASS 61
1F 3,800,542
5 3,800,543
35 3,800,544
45D 3,800,545
3,800,546
46 3,800,547
53.5 3,800,548
85 3,800,549

CLASS 62
54 3,800,550
217 3,800,551
293 3,800,552
310 3,800,553
384 3,800,554

CLASS 64
1V 3,800,555
6 3,800,556
13 3,800,557
23.7 3,800,558

CLASS 65
18 3,801,294
33 3,801,295
95 3,801,296
3,801,297
104 3,801,298
133 3,800,344
169 3,801,299

CLASS 66
9R 3,800,559
14 3,800,560
57 3,800,561
95 3,800,563
136 3,800,564

CLASS 68
5D 3,800,565
12R 3,800,566
23.2 3,800,567
205R 3,800,568
3,800,569

CLASS 70
18 3,800,570
71 3,800,571
134 3,800,572
217 3,800,573
231 3,800,574
233 3,800,575
302 3,800,576
313 3,800,577

CLASS 71
3 3,801,300
76 3,801,301
121 3,801,302

CLASS 72
56 3,800,578
67 3,800,579
68 3,800,580
71 3,800,581
78 3,800,582
349 3,800,583
410 3,800,584
469 3,800,585

CLASS 73
3 3,800,587
19 3,800,595
23.1 3,800,602
40.5R 3,800,596
49.2 3,800,586
59 3,800,597
71.6 3,800,588
90 3,800,589
104 3,800,598
116 3,800,599
136A 3,800,591
141R 3,800,600
170A 3,800,601
170R 3,800,590
181 3,800,592
422GC 3,800,593
516R 3,800,594

CLASS 74
89 3,800,605
198 3,800,606
200 3,800,607
230.17E 3,800,608
230.21 3,800,609
233 3,800,610
234 3,800,611
242.15R 3,800,612
244 3,800,613
470 3,800,616
471XY 3,800,615
473R 3,800,603
3,800,614
475 3,800,617
489 3,800,618
501M 3,800,619
552 3,800,604
3,800,620
567 3,800,621
568R Re.27,958
573F 3,800,622
594.4 3,800,623
600 3,800,624
604 3,800,625
695 3,800,626
752C 3,800,627
864 3,800,628
869 3,800,629

CLASS 75
49 3,800,630
58 3,801,303
60 3,801,304
3,801,305
82 3,801,306
84.5 3,801,307
124 3,800,631
129 3,801,308
135 3,801,309
166C 3,801,310
168J 3,801,311
170 3,801,312
174 3,801,313

CLASS 76
82 3,800,632
112 3,800,633

CLASS 81
9.3 3,800,634

CLASS 82
2.5 3,800,635
32 3,800,636
34D 3,800,637
101 3,800,638

CLASS 83
9 3,800,639
37 3,800,640
50 3,800,641
74 3,801,089
98 3,800,642
100 3,800,643
145 3,800,644
198 3,800,645
320 3,800,646
365 3,800,647
479 3,800,648
651.1 3,800,649
789 3,800,650

CLASS 84
1.19 3,801,721
386 3,800,651
404 3,800,652

CLASS 85
13 3,800,653
49 3,800,654

CLASS 89
1.71 3,800,656
7 3,800,657
33D 3,800,658
40B 3,800,659

CLASS 90
13R 3,800,660
31 3,800,661

CLASS 91
1 3,800,662
49 3,800,663
165 3,800,664
305 3,800,665
376 3,800,666
380 3,800,667
399 3,800,668
411R 3,800,669
420 3,800,670
459 3,800,671
487 3,800,672
3,800,673

CLASS 92
48 3,800,674
74 3,800,675

CLASS 93
1C 3,800,676
36DA 3,800,677
36.6 3,800,678
36.9 3,800,679
49M 3,800,680
51R 3,800,681
59MT 3,800,682

CLASS 96
1R 3,801,314
1.4 3,801,315
1.5 3,801,316
1.8 3,801,317
3 3,801,318
27R 3,801,319
48HD 3,801,321
48R 3,801,320
56 3,801,322
66R 3,801,323
66T 3,801,330
82 3,801,324
87A 3,801,325
114.7 3,801,326
115P 3,801,328
3,801,329
115R 3,801,327

CLASS 98
115K 3,800,689

CLASS 99
295 Re.27,959
3,800,690
332 3,800,692
391 3,800,691
403 3,801,331
643 3,800,693

CLASS 100
45 3,800,694
214 3,800,695

CLASS 101
6 3,800,696
128.1 3,800,697
137 3,800,698
147 3,800,699
269 3,800,700
288 3,800,701
425 3,800,702

CLASS 102
1R 3,800,703
6 3,800,704
20 3,800,705
92.7 3,800,706

CLASS 104
94 3,800,707
148LM 3,800,708
172S 3,800,709
251 3,800,710

CLASS 105
3,800,711
366D 3,800,712
369A 3,800,713
377 3,800,714

CLASS 106
15AF 3,801,332
15FP 3,801,333
38.3 3,801,334
38.8 3,801,335
53 3,801,336
73.4 3,801,337
90 3,801,338
97 3,801,339
238 3,801,340
282 3,801,341
284 3,801,342
288B 3,801,343
300 3,801,344
314 3,801,345

CLASS 109
49.5 3,800,715

CLASS 110
173R 3,800,716

CLASS 112
20 3,800,717
79R 3,800,718
203 3,800,719
235 3,800,720

CLASS 114
.5F 3,800,721
16R 3,800,722
26 3,800,723
39 3,800,724
56 3,800,725
61 3,800,726
66.5H 3,800,727
105 3,800,728
106 3,800,729
145R 3,800,731
222 3,800,732
235A 3,800,733

CLASS 115
31 3,800,734

CLASS 116
63P 3,800,735
70 3,800,736
114R 3,800,730
124R 3,800,737

CLASS 117
16 3,801,346
17 3,801,347
21 3,801,348
31 3,801,349
47R 3,801,350
3,801,351
62 3,801,352
71M 3,801,353
75 3,801,354
93.1GD 3,801,355
93.3 3,801,356
107.2P 3,801,357
113 3,801,358
115 3,801,359
116 3,801,360
124E 3,801,361
143B 3,801,362
160R 3,801,363
212 3,801,364
3,801,365
3,801,366
231 3,801,367
239 3,801,368

CLASS 118
8 3,800,738
48 3,800,740
50 3,800,741
246 3,800,742
259 3,800,743
637 3,800,744

CLASS 119
18 3,800,739
51.11 3,800,745
56R 3,800,746

CLASS 122
235R 3,800,747
367C 3,800,748

CLASS 123
8.09 3,800,760
32EA 3,800,749
3,800,750
41.84 3,800,751
52M 3,800,752
73CB 3,800,754
73A 3,800,753
102 3,800,755
117A 3,800,756
3,800,758
3,800,759
117R 3,800,757
119A 3,800,764
3,800,765
3,800,766
119C 3,800,763
119E 3,800,761
119F 3,800,762
3,800,767
133 3,800,768
139AJ 3,800,770
139AW 3,800,769
148E 3,800,771

CLASS 124
13A 3,800,773
35A 3,800,774
43 3,800,775

CLASS 125
11AT 3,800,776

CLASS 126
25R 3,800,777
369 3,800,778
374 3,800,779

CLASS 128
2B 3,800,781
3,800,783
2F 3,800,780
2S 3,800,782
2.06E 3,800,784
42Z 3,800,802
52 3,800,785
66 3,800,786
75 3,800,787
83 3,800,788
83.5 3,800,376
89 Re.27,957
90 3,800,789
132D 3,800,790
152 3,800,791
156 3,800,792
188 3,800,793
214E 3,800,794
275 3,800,795
284 3,800,796
290R 3,800,797
349R 3,800,798
3,800,799
408 3,800,800
419P 3,800,801

CLASS 130
24 3,800,803
27HF 3,800,804

CLASS 131
10.3 3,800,805
144 3,800,806
147R 3,800,807
267 3,800,808

CLASS 132
7 3,800,809
9 3,800,810
3,800,811
89 3,800,812

CLASS 134
6 3,801,369
25R 3,801,370
46 3,800,813
99 3,801,371

CLASS 135
1R 3,800,814
45A 3,800,815

CLASS 136
86B 3,801,372
109 3,801,373
120FC 3,801,374
135R 3,801,375
160 3,801,376
233 3,801,377

CLASS 137
75 3,800,816
242 3,800,817
334 3,800,818
3,800,820
343 3,800,819
384.4 3,800,821
489.5 3,800,822
3,800,823
541 3,800,824
544 3,800,825
560 3,800,826
614.2 3,800,827
625 3,800,828
625.27 3,800,829
625.41 3,800,830
625.48 3,800,831
625.65 3,800,832

CLASS 138
89 3,800,833
151 3,800,834

CLASS 139
291R 3,800,835

CLASS 140
93.2 3,800,836

CLASS 141
131 3,800,837

CLASS 144
1C 3,800,838
32 3,800,839
87 3,800,840
323 3,800,842

CLASS 145
50E 3,800,841

CLASS 148
3 3,801,378
6.27 3,801,379
13.2 3,801,380
31.5 3,801,381
159 3,801,382
187 3,801,383
188 3,801,384

CLASS 149
19.9 3,801,385
22 3,801,386

CLASS 150
.5 3,800,843

CLASS 152
356 3,800,844

CLASS 156
2 3,801,387
3 3,801,388
6 3,801,389
8 3,801,390
16 3,801,391
51 3,801,392
56 3,801,393
62.2 3,801,396
70 3,801,394
73 3,801,395
99 3,801,397
120 3,801,398
148 3,801,399
167 3,801,400
172 3,801,401
182 3,801,402
229 3,801,404
244 3,801,403
306 3,801,405
3,801,406
380 3,801,407
515 3,801,409
552 3,801,408

CLASS 159
47 3,800,845

CLASS 160
35 3,800,846

CLASS 161
1 3,801,410
3,801,411
3,801,412
21 3,801,413
3,801,414
24 3,801,415
36 3,801,416
43 3,801,417
3,801,418
44 3,801,419
52 3,801,420
67 3,801,421
82 3,801,422
117 3,801,423
123 3,801,424
162 3,801,427
169 3,801,428
181 3,801,429
184 3,801,430
190 3,801,425

CLASS 162
19 3,801,431
50 3,801,432
181D 3,801,433
198 3,801,426
201 3,801,434
202 3,801,435
252 3,801,436
274 3,801,437

CLASS 164
64 3,800,848
82 3,800,849
250 3,800,850
252 3,801,153
255 3,800,851
278 3,800,852
281 3,800,853
283 3,800,854
3,800,855
3,800,856

CLASS 165
1 3,800,857
3,800,858
9 3,800,859
3,800,860
12 3,800,862
47 3,800,863
3,800,864
92 3,800,865
111 3,800,861
122 3,800,866
158 3,800,867
170 3,800,868

CLASS 166
.5 3,800,869
65R 3,800,870
250 3,800,871
270 3,800,872
272 3,800,873
274 3,800,874
276 3,800,875
295 3,800,847
301 3,800,876
305R 3,800,877

CLASS 169
20 3,800,878

CLASS 171
104 3,800,879

CLASS 172
39 3,800,880
165 3,800,881
273 3,800,882
371 3,800,883
780 3,800,884
809 3,800,885

CLASS 173
57 3,800,887
93 3,800,886
131 3,800,888

CLASS 174
11R 3,801,722
15BH 3,801,723
15C 3,801,724
28 3,801,725
40R 3,801,726
50 3,801,727
52S 3,801,728
73R 3,801,730
106R 3,801,729
163F 3,801,731

CLASS 175
19 3,800,889
209 3,800,890
374 3,800,891
410 3,800,892

CLASS 176
3 3,801,438
19LD 3,801,440
19R 3,801,439
3,801,441
29 3,801,442
30 3,801,443
37 3,801,444
39 3,801,445
3,801,446
40 3,801,447
3,801,448
50 3,801,734
68 3,801,449
73 3,801,450
3,801,451
78 3,801,452
3,801,453
87 3,801,454

CLASS 177
25 3,800,893
64 3,800,894
136 3,800,895

CLASS 178
5.1 3,801,732
3,801,735
5.2A 3,801,736
6 3,801,737
6.6B 3,801,738
6.8 3,801,740
3,801,741
7.85 3,801,739
19 3,801,733

CLASS 179
2R 3,801,742
5R 3,801,743
6R 3,801,744
7.1R 3,801,745
15AS 3,801,747
15BY 3,801,746
15A 3,801,748
18GF 3,801,749

CLASS 180
5R 3,800,896
3,800,897
9.62 3,800,901
31 3,800,898
49 3,800,899
79.1 3,800,902
79.2B 3,800,903
79.2R 3,800,900
105E 3,800,904
117 3,800,905

CLASS 181
.5EC 3,800,907
.5NP 3,800,906
.5R 3,800,908
33A 3,800,909
35A 3,800,910

CLASS 182
18 3,800,911
65 3,800,912

CLASS 184
6.13 3,800,913
6.25 3,800,914

CLASS 187
1 3,800,915
73 3,800,918

CLASS 188
1D 3,800,916
26 3,800,919
32 3,800,917
73.6 3,800,923
106F 3,800,920
134 3,800,922
161 3,800,562
298 3,800,921

CLASS 191
12.2R 3,801,752
44.1 3,801,751

CLASS 192
.084 3,800,926
4A 3,800,924
45 3,800,925
3,800,927
85CA 3,800,928
99S 3,800,929
104F 3,800,930
106.2 3,800,931

CLASS 194
10 3,800,932

CLASS 195
28R 3,801,455
3,801,456
29 3,801,457
3,801,458
30 3,801,459
51A 3,801,460
66R 3,801,461
3,801,462
68 3,801,463
80R 3,801,464
3,801,465
103.5R 3,801,466
139 3,801,467
141 3,801,468

CLASS 197
49 3,800,933
52 3,800,934

CLASS 198
24 3,800,935
34 3,800,936
131 3,800,937
204 3,800,938

CLASS 200
11DA 3,801,753
38FA 3,801,754
43 3,801,761
44 3,801,755
3,801,756
50B 3,801,757
50C 3,801,758
61.08 3,801,759
144C 3,801,760
148A 3,801,762
148R 3,801,763
3,801,764
153G 3,801,765
157 3,801,766
161 3,801,767
163 3,801,768

CLASS 201
17 3,801,469

CLASS 202
142 3,801,470
173 3,801,471
263 3,801,472
3,801,473

CLASS 203
10 3,801,474
20 3,801,475

CLASS 204
5 3,801,476
15 3,801,477
22 3,801,478
37 3,801,479
99 3,801,480
149 3,801,481
152 3,801,482
157.1H 3,801,484
157.1R 3,801,483
181 3,801,485
195L 3,801,486
206 Re.27,961
224M 3,801,487
252 3,801,488
284 3,801,489
290F 3,801,490
299 3,801,491
302 3,801,492

CLASS 206
19.5R 3,800,939
42 3,800,940

CLASS 208
78 3,801,493
79 3,801,494
97 3,801,495
111 3,801,496
3,801,497
139 3,801,498

CLASS 209
77R 3,800,941
80.5 3,800,942
237 3,800,943

CLASS 210
11 3,801,499
23 3,800,944
54 3,801,500
59 3,801,501
73 3,800,945
84 3,800,946
117 3,800,947
136 3,800,948
171 3,800,949
242 3,800,950
3,800,951
324 3,800,952
401 3,800,953
497 3,800,954
528 3,800,955
533 3,800,956

CLASS 211
41 3,800,957
43 3,800,958
89 3,800,959
124 3,800,960

CLASS 213
8 3,800,961

CLASS 214
2.5 3,800,962
16.4A 3,800,963
17DA 3,800,964
32 3,800,965
77R 3,800,966
450 3,800,967
500 3,800,968
778 3,800,969

CLASS 219
10.79 3,801,769
69V 3,801,770
76 3,801,771
98 3,801,772
349 3,801,773

CLASS 220
9LG 3,800,970
17 3,800,973
23.4 3,800,974
24R 3,800,971
26S 3,800,975
31R 3,800,976
44R 3,800,972
83 3,800,977
85R 3,800,978
89A 3,800,979

CLASS 221
195 3,800,980
198 3,800,981

CLASS 222
20 3,800,982
52 3,800,983
146HE 3,800,986
146H 3,800,985
153 3,800,987
465 3,800,988

CLASS 224
5R 3,800,989
42.42R 3,800,990

CLASS 225
2 3,800,991

CLASS 226
11 3,800,992
97 Re.27,960
187 3,800,993

CLASS 228
2 3,800,995
3,800,996
3 3,800,997

CLASS 229
2.5 3,800,998
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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

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Frederick B. Dent, *Secretary*

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